

January/February 1994

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# COMMON POINT®

A MONTHLY NEWSLETTER FOR BROADCASTERS

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## What Can Broadcasting Look for in '94?

In broadcasting as in any number of other areas it is always interesting to take a brief look at what might be coming up in the future whenever one year ends and another begins.

It's pretty hard to predict if anything brand new will pop up. "Predictors" may sell supermarket tabloids and some people will believe everything they read in them, but broadcasting people tend to be considerably more practical. When you take a look at what is upcoming in the year ahead you generally find that most of the things are carryovers from the previous year(s).

Take the AM Stereo issue, for instance. It seems like this issue has been around since the dawn of time, or at least the past fifteen years or so. The FCC, under orders from Congress, finally passed a rule making the C-Quam system the official AM Stereo standard for the USA. Will all the non-AM stereo stations in the country rush out to their nearest AM stereo exciter dealer to buy one in 1994? Don't hold your breath waiting for it to happen. Unless some marketing genius comes up with a way to convince both broadcasters and listeners that this is a really hot item the chances are there won't be any big rush to jump on the AM stereo bandwagon.

The first quarter of the year should see an overhauled EBS system, probably around NAB time in March. There are three main system developers, they being Sage Alerting Systems whose technology is based on the RBDS system, TFT Inc., whose system would allow broadcasters to keep much of their current equipment, and Information Systems Labs who would utilize Ku-band satellite links. Most broadcasters will agree that the present

system is not doing the job so whichever system(s) are eventually decided on should be an improvement.

Sometime during the first half of the year there should be an FCC ruling out establishing limits on RF radiation exposure. The commission is planning on adopting a standard based on the ANSI/IEEE C.95.1-1992 standard, however the EPA has recommended that the ANSI/IEEE standard not be adopted because it has flaws that make it questionable whether it is protective enough of public health and safety. This standard also covers up to 100MHz only and with about half of the FM broadcast band above that frequency it seems a little ridiculous to think of having two sets of standards for one group of broadcasters. The latest cutoff dates for comments was Jan. 10 and for reply comments Feb. 28.

DAR, or DAB if you prefer, will be going through some extensive tests this year. The first batch of tests are being conducted by the EIA and NRSC at NASA's Lewis Research Center in Cleveland. Later in the year subjective tests will be conducted at the Canadian Research Center in Ottawa. Don't look for any type of rule-making from the FCC this year.

The FCC should continue it's crackdown on rules violators in the upcoming year. EBS and tower lighting violations seem to be the leaders in the technical violation area so it would behoove all broadcasters to either make sure your operations are in compliance in all areas of the rules or keep your checkbooks handy to cover possible fines for violations.

The Grand Alliance HDTV system is expected to be submitted to the ATTC next fall for lab and field testing.

Barring any delays the FCC Advisory Committee could submit a final HDTV recommendation to the Commission early in 1995.

Finally, it is expected that the economic upswing which has been reported by the trade magazines should continue into 1994, barring unforeseen economic problems.

Have a great 1994!!  
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## SBE MEMBERS SAVE BIG ON SPRING NAB REGISTRATION

SBE has arranged with the National Association of broadcasters a special registration rate for the Engineering Conference at the Spring NAB Show. SBE members will be able to register at the NAB member rate. This is a savings of \$300, or more than five times the cost of SBE dues for one year!

Make plans now to attend the NAB Spring Show, March 22-24, in Las Vegas. Conference registration includes entrance to the exhibition floor, which features a half million square feet of broadcast equipment, products and services—the largest exhibition of its kind in the world.

You must be an SBE member in good standing (dues paid) to take advantage of this special rate. [Reprint from SBE Signal]

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GORDY DAILEY

## Editor's Notebook

When I first became interested in radio a few years ago, (quite a few actually), I was in high school. After graduation I enlisted in the Navy and that's when radio became a full-time job. It didn't take long to find out that radio waves, or electromagnetic waves if you prefer, sometimes do strange things. Likewise, the people who dabble in these things exhibit some strange behavior at times. How else can you describe someone who can fall asleep at a typewriter with a pair of headphones on copying CW and not miss a character, and doing this through various types of noise and interference. You also find out about such things as sky-waves, skip-zones and other interesting things.

What this is all leading up to is that a couple of weeks ago during one of our "arctic cold spells" I was trying to figure out what you can do in weather like this besides sit in a warm house and look out the window. Even the most dedicated winter sports enthusiasts don't go out much when you have temperatures -20 to -30 and wind chills another 30 degrees lower than that. There are, however, a group of people who have a hobby they pursue mainly during this time of year in more northerly latitudes than the ones we live in. They are DX-ers from the Scandinavian countries who every winter try to see how many broadcast stations they can log. They try to pick up stations from all over the world but their main interest is American broadcasters and specifically AM stations since radio waves in that band propagate better over long

distances than would FM frequencies.

I can remember getting reception reports from these people at the AM station where I worked and when you see what they go through just to pursue their hobby you can appreciate how dedicated they are.

Many of them will do some playing around during the year in the cities and towns in central parts of Sweden, Norway and Finland, but reception conditions don't really get good until winter and that's when they migrate up to the far northern areas of the countries. Reception conditions generally are best during the months of December and January so they will take a couple of weeks off and pack their receiving equipment, tape recorders and reels of antenna wire into the car and head for the Arctic Circle to some remote cabin as far away from any type of man-made noise sources as they can get. Then, if you can imagine it, they string antenna wire, in many cases half-a-mile or more and not just one wire. They may run several wires in different directions depending on which part of the world the best reception is at a given time. Remember, this is being done in subzero temperatures usually and also in the dark since the sun doesn't appear up there for a couple of months during the winter. Then they settle in and see how many stations they can log.

Generally there are two or three people so they can work in a rotating shift for best reception periods. Everything is tape recorded for future reference so in case there is a station that they can't readily identify they can play the tape back later on and possibly come up with the station call letters and some program information. I once got a reception report that the guy had worked on off and on for about a year-and-a-half playing back the tape trying to pick out the call letters before he finally succeeded.

There isn't too much of a problem picking up the higher powered stations or the clear channels but it gets pretty tricky when there are a considerable number of co-channel stations on one frequency and you try to pick out the signal of a 1KW station when many of the others are running 5 or 10KW. You might have to sit and listen for a long time for just exactly the right set of conditions.

I had the opportunity a few years ago to take a trip to Scandinavia and made arrangements to get together with one of the guys I had sent a reception confirmation report to. We spent an enjoyable afternoon in Stockholm comparing notes on American broadcasting versus Swedish broadcasting. When it comes to being dedicated to a hobby, these guys are in about the same class as a lot of the hams that I know. I used

to do some hamming myself years ago but I don't think I would have gone out and set up a station in the middle of the winter in the dark unless someone was paying me.

I would imagine a lot of you are familiar with the reception reports that these DX-ers send out but for those of you who aren't, if you get one in the mail take the time to check out the info and send a confirmation and a little note of appreciation. It doesn't take that long and it makes all the effort they put into it worth while.

## CORRECTION

On page 13 of the last issue of Common Point there was a short article regarding new tower lighting rules. There was a misprint in the article and also some wrong information. The correct number of the advisory circular referred to is: AC 70/4760-1H, and the person to contact is a Ms. Cott at (202)-366-0039. You can also try calling the FAA office for your region. I apologize for the errors and hope it didn't cause too much inconvenience.  
\*\*\*\*\*

### If You're In Need Of A Compact High Quality Near Field Monitor System Then You Need The Electro-Voice S-40

The S-40 is an ultracompact, high-output (160 watts power handling capacity) near field monitor designed to fit easily into tight work spaces in the studio, production truck or post-production facility. A 5-1/4-inch direct-radiating woofer and a 1-1/4-inch soft-dome tweeter are designed for optimal performance in the high-impact polystyrene enclosure. PRO™ protection circuitry automatically protects the S-40 from accidental overpowering. The S-40 is video shielded (a low-flux-leakage design) to minimize any problems when placed near a video monitor. Available in black (S-40B) or white (S-40W). The S-40's may be wall or ceiling mounted with the optional S-40MBB (black) or S-40MBW (white) brackets. S-40's are sold in pairs.



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## CBC Radio

The Canadian Broadcasting Corporation's Radio services in collaboration with Industry Canada have taken the first step in making CBS Radio programming available over the Internet global communications network.

Internet is an international link for various domestic computer networks. Until recently, account holders could only access and exchange data and text. However, it is now possible to access audio material.

An experimental database containing sound and text files from such CBS Radio programs as Quirks and Quarks, Basic Black and Sunday Morning has been established at the Communications Research Center (CRC), Industry Canada's major research facility located at Shirley's Bay in Ottawa. It is currently transmitting this programming over the Internet to more than 20,000 networks in 152 countries.

"I am delighted that the CBC is participating in this project. Internet will bring Canadian public radio programming to a huge new potential audience in this country and around the world," said Harold Redekopp, CBS's Vice-President of English Radio. "This is another example of our commitment to using new technologies to distribute our services as widely as possible, thereby

achieving further use and exposure of our work."

John Manley, Canada's Industry Minister, said, "A country as large as Canada has much to gain by exploiting information networks and highways to improve access to education, enhance delivery of services and boost industrial competitiveness. This project illustrates how Industry Canada is working in collaboration with industry, the educational community and other governments to develop and pursue opportunities created by the rapid advancement of information technologies."

The CRC has collaborative research and development arrangements with over two dozen research organizations in North America and Europe. It currently has a staff of over 200 engineers and scientists supported by more than 50 technologists. Its major clients include federal government departments, universities and private industry.

The CBS Radio trial represents the first ever presence on the Internet by a national broadcaster. Earlier attempts at "radio" on the Internet have been largely directed towards a technical audience. The CBC trial provides a rich variety of general interest programming that gives listeners the ability to select program segments of their choice. These are available "on demand" rather than

being tied to a fixed broadcasting schedule.

"Future phases of the trial will build on the existing content, with additional programming including SRC French language programming, foreign language programming from Radio Canada International and eventually archival information," said Michael McEwen, CBC's Senior Vice-President of Radio Services. "The trial will provide Internet users from around the globe with world-class Canadian content."

As the world's fastest growing on-line service, the Internet electronic communications network continues to expand at a rate of 10 per cent every month. Close to 30 million people, including more than 500,000 in Canada, now have access to Internet services.

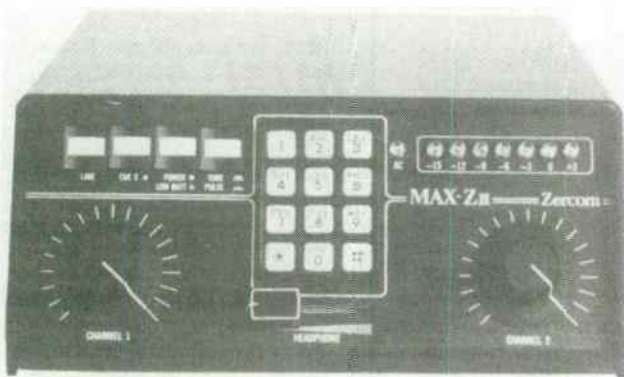
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## Basketball Tournament Time is Just Around the Corner! Will Your Remote Equipment be Ready for the Tipoff?

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The MAX-Z II is an abbreviated version of the famous Zercom MAX-Z Remote Broadcasting Telephone System. High quality audio handling is maintained in the two channels of audio input. Headroom, noise performance, and distortion are comparable in quality to studio consoles. The Zercome MAX-Z II continues the MAX-Z world class tradition of excellence.



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## Will RBDS Become The Commuter's Best Friend?

The Traffic Message Channel (TMC) is a new Radio Broadcast Data System (RBDS) feature used to transmit traffic information to RDS (the European version of RBDS) receivers. Volvo and the Minnesota Department of Transportation (MDOT) have been conducting field trials of RBDS delivered traffic information in the Minneapolis area.

Volvo introduced the first commercially available RDS car radio in 1986. Since 1988, Volvo has been researching and testing various methods of using TMC to alert drivers to traffic problems. In 1992, Volvo began testing of the TMC in the DYNAGUIDE system in Sweden. The DYNAGUIDE system consists of a modified RDS radio and the DYNAGUIDE electronics and display unit.

DYNAGUIDE provides a 5-inch color display terminal for invehicle use. Area maps, digitally stored on memory cards, are displayed on the terminal. RBDS/RDS TMC is used to locate and activate icons representing traffic incidents, slippery roads, slow traffic, etc. The icons are superimposed on the area map.

TMC data messaging information is transmitted in RBDS/RDS Group 8A. RBDS/RDS messages are assigned Group numbers ranging from 0 to 15 which define the type of data being transmitted. Volvo is using ALERT C, a TMC protocol now being proposed as a European standard. ALERT C codes the TMC data as follows:

1. Event description, providing details of the traffic disturbance;
2. Location, indicating the location of the incident;
3. Extent, identifying adjacent areas, segments or specific point locations also affected;
4. Duration, giving an indication of how long the problem is expected to last;
5. Diversion advice, whether or not drivers are recommended to avoid the area.

All the above information, describing one event, can be transmitted as TMC data using only 37 bits.

The TMC data is transmitted by an FM station, using RBDS/RDS encoding equipment, on a 57 kHz subcarrier. As traffic incident information is entered into the traffic data input computer, location codes are transmitted on the TMC in order to properly locate icons on the driver's display map.

In the Minneapolis tests of DYNAGUIDE, the city is divided into quadrants. The driver can select a particular quadrant by pressing a button on the display unit. Traffic information for the selected quadrant is immediately displayed. Traffic data is entered into a

computer at the traffic management center. The data is sent instantly to KBEM radio's RBDS encoder, where it is transmitted. The data is received by an RDS receiver in the vehicle and sent on to the DYNAGUIDE electronics.

Several DYNAGUIDE systems currently are installed in MDOT fleet vehicles. Next month, the agency expects to expand the test program to commercial vehicles such as buses and delivery vehicles.

The Minneapolis test program is being administered by the MDOT with funding from the Federal Highway Administration. DYNAGUIDE is one of several approaches to providing real-time map-based traffic information to drivers. Other methods of data transmission, including high-speed FM subcarriers, will be investigated as part of this pilot project.

If you have questions on the Minneapolis field trials, contact Linda Taylor at (612)582-1461. To obtain a copy of the RBDS standard, contact NAB Services at (800) 368-5644 or (202) 429-5373. Member price: \$30. (Nonmembers pay \$60.) [Reprinted from NAB Associate News]

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## FCC Getting Rid of Off-Air AM's

Once again, the FCC is out to rid its database of AM stations that are licensed, but off-the-air and showing little sign of returning to operation. This time around, the stations are WCSP-AM in Crystal Springs, MS (silent since Oct. '91) and WCSA-AM in Ripley, MS (silent since Sept. '91) both 500-watt stations in small towns. The Commission has asked both to tell it why their license shouldn't be revoked and why they shouldn't be fined up to \$250,000 for being off the air without the FCC's OK.

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## Radio Revenue Continues to Rise

New York Radio advertising continues on an upswing that began late last year. The latest Radio Advertising Bureau (RAB) shows that third quarter 1993 revenues are up 9 percent over the same time period in 1992.

According to the RAB, national spot revenue is up 7 percent, and network radio revenue was up 6.7 percent. Every region of the country has shown growth.

RAB President Gary Fries said the radio advertising growth rate "is currently the envy of other traditional media."

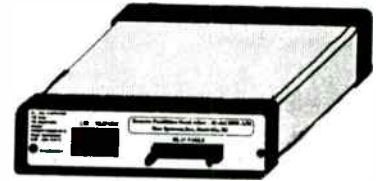
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# SINE SYSTEMS

## Model RFC-1/B Remote Facilities Controller

The Inexpensive Way to "Dial-Up"  
Remote Control

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NEW IMPROVED  
Software



There are a number of excellent dial-up remote controls available today. However, most of them share two things in common: 1) they are fairly expensive and 2) they have a number of extra features, "bells and whistles," that many users do not need. To give the broadcaster an alternative, Sine Systems decided to develop the RFC-1. This decision occurred at the same time a new generation of microprocessors was becoming available which offered some very interesting possibilities for use in a remote control. The combination of our "No frills" design approach and the use of this microprocessor has resulted in a dial-up remote control which is ingeniously simple and very cost effective; yet it is a precision, high quality device, built to withstand many years of service.

Remote Facilities Controller,  
model RFC-1/B: .....\$1099.00

Relay Panel, model RP-8 ...\$399.00

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## NAB ENGINEERING AWARDS GO TO MORGAN AND VAUGHAN

The National Association of Broadcasters today announced the recipients of its radio and television engineering achievement awards.

Charles T. Morgan, senior VP, and VP of engineering, Susquehanna Radio Corp., York, PA, will receive the 1994 radio engineering award. Thomas Vaughan, president, PESA Micro Communications, Inc., Manchester, NH, will receive the 1994 television engineering award.

Both will receive their awards March 23 at the engineering luncheon during NAB's annual convention, March 20-24, Las Vegas, NV. NAB's spring convention is the world's largest exhibition and conference for the television, radio and allied industries. Last year, it attracted more than 64,000 industry attendees.

Morgan receives the radio award for a lifetime of industry work, most notable as chairman of the National Radio Systems Committee (NRSC). The NRSC, jointly sponsored by NAB and the Electronic Industries Association (EIA) is a technical standards setting group of broadcasters, equipment makers, and consultants.

As NRSC chairman, Morgan was instrumental in developing the AM transmission and receiver standards,

and the RBDS broadcasting standard. Morgan continues to lead NRSC work in the areas of FM high-speed subcarriers and digital audio broadcasting.

Vaughan is responsible for pioneering work in high power components and antennas for radio and TV, and more recently, his contribution to HDTV standards. Vaughan founded Micro Communications, Inc. (now a member of the Chyron Group) in 1966. The company designs, produces and installs RF systems worldwide, and recently rebuilt Kuwait's TV and radio in-

frastructure. Vaughan has patents (issued or pending) for broadcast products. Vaughan has a B.S. in electrical engineering from ITT Technical Institute and pursued graduate studies in electrical engineering at MIT and Northeastern University.

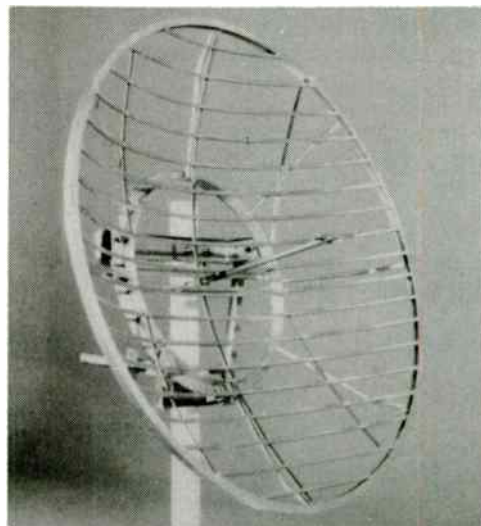
NAB selects its engineering winners on the basis of a single significant contribution, or contributions made over a period of time that have measurably advanced the state-of-the-art in broadcast engineering.

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## PROPOSALS SOUGHT FOR NEW FM DATA BROADCASTING SERVICES

Proposals for a new FM high-speed subcarrier standard that would allow radio stations to get into the high-speed data broadcasting business are being sought by the National Radio Systems Committee (NRSC) High-Speed FM Subcarrier Subcommittee.

The nation's 6,000 FM stations provide a unique opportunity to serve as a mobile link for future users of the super information highway.

The NRSC is an industry group that sets technical standards for broadcasters and equipment makers, and is sponsored by the NAB and the Electronic Industries Association (EIA).

The proposed high-speed subcarrier standard will be compatible with the recently adopted U.S. RBDS standard and should provide broadcasters, equipment makers, and data service providers with a transparent data pipeline suitable for data broadcasting to both fixed and mobile environments, including automobile and hand-held receivers. One potential use would relay real-time traffic information to cars equipped with data broadcast receivers.

Copies of the NRSC request for proposal are available from NAB's John Marino at 202-429-5391 or EIA's Tom Mock at 202-457-4976.

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## Fines for EEO Violations

The FCC last week imposed a total of \$318,750 in fines on 22 of 24 radio stations up for renewal and under review for their equal employment opportunity practices. Fines ranged from \$18,750 to \$37,500. Short-term renewals were assessed against 21 of the 22 fined stations. Two stations escaped all sanctions. The fines and penalties included:

California: KKCB/KSLY-FM San Luis Obispo; owner, San Luis Obispo Limited Partnership, short-term renewal subject to reporting conditions: \$25,000 fine. KTMS/KHTY-FM Santa Barbara; Pinnacle Communications, short-term renewal subject to reporting conditions: \$31,250 fine. KSPA (AM), KOWF (FM) Escondido; North County Broadcasting Co., renewal subject to reporting conditions.

Texas: KGNC-AM-FM Amarillo; Stauffer Communications Inc., Short-term renewal, subject to reporting conditions: \$25,000 fine. KEBE (AM), KOOL-FM Jacksonville; Waller Broadcasting, short-term renewal subject to reporting conditions: \$31,250 fine. KGVL (AM), KIKT (FM) Greenville, First Greenville Corp., short-term renewal subject to reporting conditions: \$37,500 fine. KEGL (FM) Fort Worth, Eagle Radio Inc., short-term renewal subject to reporting conditions: \$18,750 fine. KMND (AM), FNFM (FM) Midland, Bakcor Broadcasting Inc., short-term renewal subject to reporting conditions: \$25,000 fine. KTEM (AM),

KPLE (FM) Temple, Formby Stations, short-term renewal subject to reporting conditions: \$25,000 fine. KSAM-AM-FM Huntsville, Formby Stations, short-term renewal subject to reporting conditions: \$31,250 fine. KYKX (FM) Longview, Sun Group Inc., short-term renewal subject to reporting conditions: \$31,250 fine.

Seattle: KEZX-AM-FM, Park Broadcasting, short-term renewal subject to reporting conditions: \$18,750 fine. KVI (AM), KPLZ (FM), Golden West Broadcasters, short-term renewal subject to reporting conditions: \$18,750 fine. (Reprinted from Broadcasting and Cable, February 7, 1994.)

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## Proposals Sought For High-Speed Data Broadcasting

The National Data Broadcasting Committee (NDBC) has released a request for proposals (RFP) for high-speed data broadcasting applications. All interested parties may participate. The NDBC intends to evaluate the proposals, select one or more practical systems, plan and execute laboratory and/or field tests of selected systems, and recommend voluntary standards.

Required elements for proposals include the following:

A description of the system in relation to the International Organization  
(cont. to pg. 7)

## TOWER AND OBSTRUCTION LIGHTING PRODUCTS

FLASHER  
FS155-30T



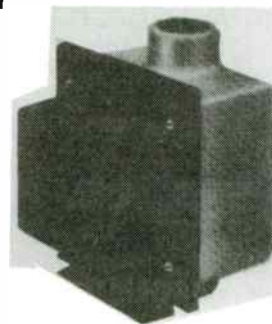
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SSAC offers a complete line of solid state products to control and monitor the lights on communication towers and other tall structures. SSAC solid state products have proven performance and reliability with years of infield use. Flash single or multiple beacons. Sense lamp failure in the beacon, side lamps, or other obstruction lighting with an alarm output. The PCR11 Photo Control with its all plastic housing is ideal for turning on complete tower lighting at dusk (factory calibrated).

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(cont'd from pg. 6)

for Standardization (ISO) Open Systems Interconnection (OSI) seven-layer reference model. Systems will be evaluated and tested at the OSI physical and data link layers.

A description of the OSI physical layer including: transmitted bit rate, frequency spectrum profile, modulation format, out-of-band emissions, expected coverage relative to Grade A&B NTSC service area, expected degradations to host NTSC signal or other broadcast signals, expected immunity to multipath and interference.

A description of the OSI data link layer including: net (useful) bit rate, bit error rate versus carrier-to-noise, error correction techniques, end-to-end data delay, acquisition time, data framing structure.

Proposals are due May 2. The deadline for delivery of hardware for testing is Nov. 1. For a copy of the NDBC RFP, call NAB Science and Technology at (202) 429-5346.

The NDBC was formed by NAB and

the Electronic Industries Association (EIA) in 1993. Its purpose is to develop voluntary American national standards for high-speed data broadcasting using the NTSC television service as a delivery medium.

For more information on the NDBC, contact NAB's Lynn Claudy at (202) 429-5346, or Sharp's Werner Wedam at (201) 529-8618. (Reprinted from NAR TV Tech Check.)

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### Digital Transmission Sub-Systems To Be Evaluated at ATTC

Last October, the consortium developing the HDTV standard, or Grand Alliance, announced that the sub-system specifications for the proposed digital advanced television (ATV) system and been completed with the exception of the transmission sub-system. (This sub-system consists of the modulation format and forward error correc-

tion coding scheme.) The decision on selecting a transmission sub-system will be based on the results of laboratory tests conducted at the advanced Television Test Center (ATTC), which are scheduled to conclude by Feb. 8.

The modulation formats being considered are:

- 32-state Quadrature Amplitude Modulation
- 4-state Vestigial Sideband Modulation (4 VSB)
- 6-state Vestigial Sideband Modulation (6 VSB)
- the Cable Television Laboratories facility located at the ATTC will test 256 QAM and 16 VSB versions of the above formats for cable applications.

The plan, developed by the FCC Advisory Committee's Working Party on Evaluation and Testing, consists of these objective performance tests:

- Bit error rate versus carrier-to-noise ration
- Peak-to-average ratio
- Interference (ATV-into NTSC, NTSC-into-ATV, ATV-into-ATV)

(cont. to pg. 11)

## When you See a Radio Control Room Pictured, What Mic Shows up the Most? ELECTRO-VOICE's RE20 or RE27N/D, and for Good Reason!



Pro Net Price  
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### RE20 VARIABLE-D® DYNAMIC CARDIOID

The RE20 has a sound that has made it one of the most popular broadcast announce and voice-over microphones in the world. The RE20 has a smooth, extended, clean response with a Variable-D® design that virtually eliminates "bass boosting" (proximity effect) when working close to the microphone. A heavy-duty, internal P-pop/blast filter allows you to be right up to the microphone with no worry about pops or hissing sounds. Features include a bass roll-off switch and an internal microphone element shock mount that reduces vibration-induced noise.



Pro Net Price  
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The RE27N/D utilizes the time-proven Variable-D® concept pioneered by the legendary RE20, but incorporates N/DYM® technology to create a dynamic microphone that exhibits higher output and even wider frequency response than the industry-standard RE20. Variable-D® reduces bass-boosting "proximity effect" to maintain a uniform low-frequency response, up close or at a distance. In addition, the RE27N/D features three switchable filters: one high frequency and two low frequency and two low frequency. An internal blast/wind filter covers the microphone head/vents along the mic body, preventing P-pops, breath sounds or excessive sibilance.

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## SBE OFFERS MODEL AGREEMENT FOR CONTRACT ENGINEERS

The Society of Broadcast Engineers, working in concert with Chip Morgan Broadcast Engineering of Sacramento, California, has prepared and is distributing to SBE members only, a model agreement for contract engineers. The model will serve as an example of some of the basic legal relationships between contract engineers and the communications facilities for which the engineer performs services. It was developed jointly by Chip Morgan and Chris Imlay.

The agreement is being distributed by SBE headquarters on disk or in hard copy. While not exhaustive, it provides the types of terms that many contract engineers should consider when negotiating an agreement with a prospective client station, and is intended to provide a "level playing field" for both parties.

For several years at its national conventions and at SBE Day at the NAB conventions, SBE has sponsored seminars on contract engineering. At each, the recommendation has been made that all contract engineers should have a written agreement with client stations for a number of reasons. These include the need for a specific understanding concerning the exact duties to be provided (and those which are not to be provided); terms of payment; limitations on liability; and avoidance of establishment of a relationship that could be construed as employment rather than an independent contractor relationship, among other legal pitfalls.

The agreement should not be used "as is", but should be modified to include the specific arrangements between the contract engineer and his or her client.

For a copy of the agreement, SBE members should contact the SBE National Headquarters at 317-253-1640. SBE is grateful for the generous contribution to this project by Chip Morgan Broadcast Engineering, Sacramento. SBE members with specific questions about the agreement and modifications should contact Chris Imlay, SBE General Counsel, at 202-296-9100 during East Coast office hours. [Reprint form SBE Signal]

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## SBE To Present 1994 Engineering Conference in LA

SBE will present its next Engineering Conference in Los Angeles, October 12-15, 1994. The Conference will be held concurrently with the NAB Radio Show, the conferences often Society of Motion Picture & Television Engineers (SMPTE) and of the Radio & Television News Directors Association (RTNDA). NAB will manage a large exhibition of broadcast engineering equipment and services at the same time.

The four conferences and the exhibition will be held at the Los Angeles Convention Center. Full registration to the SBE Engineering Conference will include entrance to the exhibits.

SBE will schedule its Annual Awards Banquet and Annual Membership Meeting during the Conference. The popular Ennes Workshops will also be held. Detailed information about the program will be available in the Spring of 1994.

SBE President, Charles Kelly, Jr., announced the names of the SBE members who will serve on the Engineering Conference Committee. The Committee has the responsibility of organizing the Conference.

Serving as Chairman will be Jerry Whitaker of Technical Press in Beaver-

ton, Oregon. Serving with Mr. Whitaker will be Marvin Born, Vice President of Engineering at WBNS Stations in Columbus, Ohio; David Carr, Chief Engineer at KHOU-TV in Houston, Texas; Dane Ericksen, Senior Engineer with Hammett & Edison in San Francisco, California; and Douglas Garlinger, Director of Engineering at Lesca Broadcasting in Noblesville, Indiana.

Mr. Whitaker also serves on a NAB Engineering Committee which is planning the Engineering Conference at the NAB Spring Show in Las Vegas, March 21-24, 1994. For the third year, SBE will have and "SBE Day", consisting of the presentation of Papers and an SBE Membership Meeting.

Beginning in 1995, SBE will work with NAB to present the entire NAB Engineering Conference, each Spring. [Reprint form SBE Signal]

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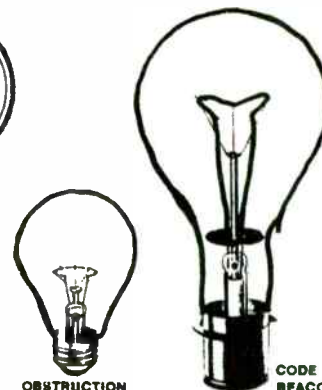
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# Technical Tips

by John Bredesen

## Some Remote Control Interface Thoughts



Transmitter remote control interfaces come in different flavors. 120 volts AC was used for the control ladder in many older transmitters, many of which date back to the era before remote control was legal. Control status consisted of looking at indicator lights on the front panel of the transmitter by the operator on duty at the transmitter. When remote control was authorized, elec-



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tromechanical relays were the only viable option for interfacing with stepper type remote control units. Most newer transmitters are delivered with just about every possible status and metering point accessible, and at a voltage level acceptable to modern remote control units. One manufacturer, in a realistic attempt to accommodate most remote control units, allows a given control line to be pulled either to ground or up to 24 volts to activate that particular function. Your choice.

Our Continental 814 series transmitter uses 24 volts, DC for control logic. The design includes relays for control interface. As the transmitter was originally delivered, these relays required an external source of 24 volts to activate them. It was quite easy to modify the circuitry so the common point of the relay coils was returned to the internal 24 volt supply, via the "remote/local" switch, instead of to ground. This way, a relay could be activated by grounding the side of the coil brought out to the interface barrier strips. This modification was made necessary because our Hallikainen DRC-190 remote control unit uses solid state device drivers which sink to ground.

LEDs are used extensively in our Continental for front panel indication of such things as interlock switch status, time delay ready, local/remote, overloads, plus a few more. I wanted access to several of these status points for remote indication, but no provisions were made for this. The solution was to use optoisolators to "sample" the appropriate LED current and supply a TTL compatible output which is totally isolated from the transmitter's control circuitry. The optoisolator LED is wired in series with the transmitter LED. I felt it unnecessary to change the original current limiting resistor because the current drop caused by the additional LED is quite insignificant. The transistor outputs of the optoisolator can be returned to ground or to a source of voltage depending upon the requirements of your remote control unit.

Optoisolators are available in DIP configuration with one, two or four optoisolators in a package. A typical quad optoisolator, such as the NEC PS2701-4NEC from Digi-Key, will set you back all of \$3.29. In perusing the catalog for this article, I noticed an optoisolator listed as an AC Line Monitor. I have no idea what this is or how it's used. I can't find out today because it's Sunday, but I'll let you know next time. It might provide an easier answer to the problem I mentioned earlier about interfacing with 120 V status circuits than the one I'll describe below. For that matter, there are inexpensive solid state

relays which will allow control of a 120 VAC relay from a low voltage source.

One of the beauties of LEDs is that they have a much longer life than incandescent pilot lamps. But we all know that they must be used with a relatively low voltage DC circuit, right? Wrong!

LEDs are essentially current operated devices and they don't care where the current originates. Usually if an LED is operated from a 24 VDC source, a resistor of about 1K is placed in series to limit the current to 20 ma or so.

It is quite practical to operate an LED from 120 VAC by using an appropriate dropping resistor and a diode, such as a 1N4004. All three components are wired in series, taking care to match the polarity of the "rectifying" diode with the LED. Think of the "rectifying" diode as more of a reverse current blocker to prevent a potentially damaging flow of current in the reverse direction. Interestingly enough, the idea will work, at least in the short term, without the 1N4004, but when I tried it, the light output of the LED was unstable and I felt it might not last very long. Take proper safety precautions when working around 120 VAC.

I was interested in using the LED as a pilot light, therefore maximum light output was an important consideration. The resistor chosen for the pilot light (4.7K, 2 watt) ran the LED near it's upper design limit, which for most LEDs is 20 to 30 ma. But note that the same concept can be used to fire the LED in an optoisolator from 120VAC. However it isn't necessary to run maximum current through the LED for satisfactory operation. Increasing the value of the resistor lowers the current in the circuit, decreases dissipation in the resistor and undoubtedly results in a decreased failure rate for all components involved. The best way to determine the minimum current is to experiment.

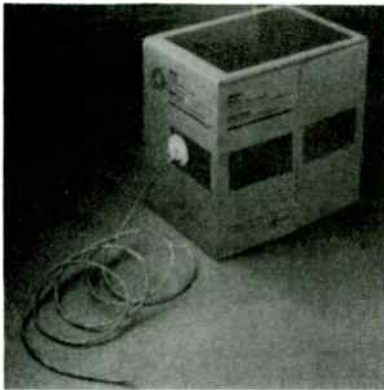
Again, keep safety in mind when working with line voltages. More people are killed from contact with "only" 120 volts than from any other voltage. If you chose to experiment with these ideas, use an isolation transformer if you have one. Anyway, unplug the circuit before making any changes!



Common Point/January/February 1994

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## BELDEN AUDIO HOOK-UP WIRE SPECIAL



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## Sony Walkman Becomes First Portable AMAX Receiver

Last month, Sony introduced the first AMAX portable receiver—the Sony SRF-42—a Walkman ((AM stereo/FM stereo) that sells for \$35 or less. A prototype of the SRF-42 premiered at The NAB Radio Show last September. The new Walkman also was displayed at January's Consumer Electronics Show in Las Vegas. The SRF-42 is the first receiver to comply with the new AMAX certification requirements for portable battery-operated receivers.

Much progress has been made to set the stage for the introduction of the Sony SRF-42. In 1986, the National

Radio Systems Committee (NRSC) was activated to spur development of a technical solution to the deteriorating quality of AM radio transmission and reception. A subcommittee of receiver manufacturers, audio processor manufacturers and broadcasters met on a regular basis over a two-year period. During that time, they addressed such issues as AM interference protection rations, the constraints placed upon receiver designers, and the quantity of AM audio processing.

The NRSC subcommittee concluded its work in 1987 and released a voluntary standard for AM broadcast audio—later identified as NRSC-1, an audio standard designed to limit AM broadcast frequency response to 10 kHz. It also provides a standard for the amount of high frequency boost that can be added to an AM signal. Its primary objective is to reduce interference on the AM band.

Shortly after the release of NRSC-1, the subcommittee continued its work to further define the bandwidth occupied by an AM station. After extensive field measurements at numerous stations in the U.S. and Canada, a so-called "RF mask" was developed by the subcommittee. This became the second voluntary AM broadcast standard—identified as NRSC-2. The RF mask provided absolute limits on the amount of bandwidth an AM station could occupy. If broadcasters could keep their signals within this RF mask, second adjacent channel interference would be eliminated. On June 30, FCC rules concerning the specifications contained within NRSC-2 will take effect.

Following the release of NRSC-2, the subcommittee began work on a receiver standard that would complement the broadcast standards and provide high quality audio from AM receivers. The subcommittee felt that as long as broadcasters complied with NRSC-1 and NRSC-2, the audio bandwidth, or frequency response of AM radios could be increased. The NRSC-3 standard was established to provide receiver manufacturers with design guidelines of AM radios with better audio quality.

After the release of the NRSC-3 receiver standard, NAB and EIA (Electronic Industries Association) formed a small working group. They were to define realistic design criteria for improved AM receivers. The working group successfully developed a set of receivers. The working group successfully developed a set of receiver specifications that later became known as the AMAX specifications.

In order to comply with the AMAX specifications, a receiver must: (1) fully comply with the NRSC-3 receiver standard, (2) incorporate noise-blanking technology, (3) provide a way to connect an external AM antenna to the

radio, and (4) tune the expanded AM band (1610 kHz-1700kHz).

Delco Electronics has produced the first AMAX radios to become standard equipment in certain top-of-the-line GM car models.

In order to encourage further development of AMAX radios and to provide a high-quality tuner for critical AM listening, NAB and DENON (a Japanese high-end audio manufacturer) agreed to cooperate in the development and marketing of a home tuner designed in accordance with AMAX specifications. The tuner, identified as the DENON TU-680NAB, is available from NAB Services at (800)368-5644 or (202)429-5373.

Both the DENON and Delco receivers are AM stereo. The adoption of C-Quam by the FCC last year influenced Sony to consider marketing C-Quam AM stereo receivers in the U.S. The AMAX certification requirements drafted specifically for portable battery-operated receivers encourage manufacturers like Sony, to market enhanced quality AM radios.

The AMAX certification requirements for portable receivers differ from the requirements for other receivers in the following ways: (1) noise-blanking is not required for portable battery-only operated radios; (2) an external antenna connection point is not required and (3) the maximum total harmonic distortion specification is relaxed from 2% to 5% for battery-operated portable. [Reprint from NAB Radio Tech Check]

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## NAB REQUESTS REVIEW OF AM DIRECTIONAL RULES

The rules relating to the performance verification of AM directional antennas should be reviewed and perhaps overhauled, NAB said in comments filed with the FCC. Modifying the current rules could prove more economical, NAB said, because many AM stations cannot afford full-time engineers who continuously can adjust AM directional antennas for top performance. NAB also noted that more practical methods for verifying directional AM signals (e.g., computer modeling software) have been developed in recent years. However, NAB cautioned that any change in the AM directional rules should not be at the expense of increased interference.

In an effort to try and arrive at a consensus on the best ways to improve AM directional antenna performance based on new or revised FCC rules NAB hosted a forum on January 13 on AM directional performance verification.

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## ABC NEWS PRESIDENT ROONE ARLEDGE TO BE INDUCTED INTO BROADCASTING HALL OF FAME

ABC News President **Roone Arledge** will be the 1994 television inductee for the Broadcasting Hall of Fame, the National Association of Broadcasters announced today.

Arledge will be honored March 21 at the NAB Television/Television Bureau of Advertising (TVB) luncheon during NAB's spring convention (NAB '94), March 20-24, in Las Vegas, NV.

Arledge has been president of ABC News since 1977, and prior to this post, served as president of ABC Sports. Among his many accomplishments, Arledge produced 10 Olympic Games, created "ABC's Wide World of Sports", and "Monday Night Football"; and news programs such as "Nightlife", "20/20", and "This Week With David Brinkley".

In September 1990, Arledge was selected as one of the "100 Most Important Americans of the 20th Century" by Life magazine. He also has won a total of 36 Emmy Awards.

Arledge is a graduate of Columbia University. He began his career in broadcasting in 1952 at the DuMont network, and then worked for six years at NBC in several production positions. Arledge joined ABC in 1960, became vice president, ABC Sports, in 1964, and was named president in 1968.

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(cont'd from pg. 7)

- Multiple impairments (co-channel NTSC plus random noise)
- Channel acquisition time
- Cable tests (phase noise, residual frequency modulation, pull-in range, intermodulation, hum modulation, fiber optic transmission)

The sites plan also includes extensive evaluation of system performance under multipath conditions. In the original tests at ATTC, the proponent systems were tested only with single echoes, with delays less than about 2.5 microseconds. In the present test plan, the test impairments include six different combinations of five simultaneous echoes, with up to 18 microsecond delays. The ability to handle dynamically changing echoes also will be evaluated. These expanded multipath scenarios are more stressful

to the system under test and are more representative of conditions to be found in the field.

Based on the results of the tests at ATTC, the Grand Alliance is expected to select a preferred transmission sub-system. Field tests of that selected transmission sub-system are then planned for this spring at the field test facility in Charlotte, NC. (Reprinted from NAB TV Tech Check)

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## Multimedia Broadcasting Demo Set For NAB' 94

Sveriges Television (SVT), the Swedish national public service broadcaster, will demonstrate a prototype of a Multimedia Broadcast Service at NAB '94 in Las Vegas, March 20-24, 1994. This will be the first North American demonstration of this technology.

The SVT system demonstrates several potential applications of a multimedia broadcasting service, including the following:

- interactive multimedia programs such as games or educational programs downloaded to receivers;

(cont. to pg. 14)

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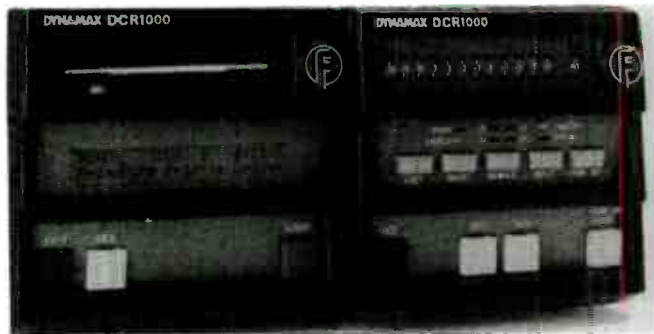
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The Record Module features extended scale peak metering with digital overload indicators. Sampling rate may be selected from the front panel or slaved to the standard AES/EBU digital input. Secondary and Tertiary cues are standard. Dubbing is made easy with the START ON AUDIO feature which allows a variable threshold audio detector to begin the process automatically. Addition of a PC/AT keyboard permits titling carts, editing their "cue tones," end checking, and looping. A built-in clock/calendar with battery backup permits inclusion of the date and time in logging entries as well as checking spots against their kill dates. A Centronics parallel printer port is included for automatic generation of cart labels.

Maintenance of the DCR1000 Series is a snap. There is nothing to clean or align and no adjustments to make. The disk drive provides over 30,000 hours of service, may be replaced in less than 15 minutes, and costs less than a set of tape heads.

Standard, low-cost 2MB computer floppy disks are used for commercials and other short material. Songs up to 5:10 are recorded on 13MB diskettes which cost about the same as a premium tape cartridge. 13MB diskettes can store up to 15 minutes of voice or AM program material. Both 2MB and 13MB disks may be used interchangeable in any player.

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## FCC To Examine Its Policies On Aural Modulation Limits

The FCC has initiated an inquiry into its rules and policies on the definition and measurement of aural modulation limits (MM Docket 92-225). Fewer than 20 parties filed comments to the NOI regarding FM modulation limits. The comments generally included the following suggestions:

The FCC should redefine FM broad-

cast modulation in terms of the RMS value of frequency deviation instead of the peak value.

Keep it simple. Any proposed changes in the modulation rules should take all stations, large and small, into consideration. Regular measurement of bandwidth would require costlier measurement equipment.

It is impractical to change radically the current modulation rules.

Present methods of modulation measurement are sufficient to prevent noticeable interference to first adjacent channels and to insure no interference to first adjacent channels. The FCC should reinstate the former Automatic Transmission System modulation standard (47 CFR, former Section 73.342).

Eliminate the term, "peaks of frequent reoccurrence" (47 CFR, Section 73.1570) from the rules. Encourage innovative measurement methods. FM occupied bandwidth limitation may need to be revised depending on real-world station operations and practices.

"Peak-weighted" modulation measurements being made today can significantly under-indicate total modulation in the presence of subcarriers.

Present modulation rules should be clarified, but the available data do not support making radical changes in the way modulation levels are determined.

The FCC should consider the characteristics of consumer receivers so that over-modulation levels will not adversely impact otherwise good reception.

Any tightening of the existing emission limitation mask could have a detrimental effect on the development of more efficient uses of the FM broadcast system.

Clearly defined and strictly enforced modulation limits would best serve the interests of broadcasters, receiver manufacturers and the listening public.

The present rules lack sufficient technical clarity to ensure that FM interference will not occur. A technical study of the effects of processed audio program material on interference to FM adjacent channels is necessary to determine if there is any merit to changing FCC modulation rules.

The FCC should specifically state whether modulation monitoring devices that intentionally ignore peaks of less than one millisecond are acceptable monitoring devices.

If the FCC only adopts an occupied bandwidth limitation, stations should be required to install FCC Type Approved occupied bandwidth monitors.

Stations still should be allowed to use modulation monitors that meet 1983 FCC specifications (47 CFR, former Section 73.332).

A wide variety of ideas have been presented to the FCC for consideration.

Reply comments were due on Dec. 15. Commenters should remember that this proceeding is now only in the inquiry stage. No new rules have been proposed. [Reprint from NAB Radio Tech.]

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## NAB Wants TV Marti Ended

WASHINGTON The NAB has again called for the abolition of the four-year old TV Marti service, a U.S. government TV broadcast into communist Cuba.

During recent testimony before a government panel studying the effectiveness, NAB International Consultant Bill Haratunian called on the government to stop wasting its time and money on the broadcasts, which have resulted in retaliatory jamming on the TV frequency, and interference to U.S. radio stations from highpowered Cuban AMs.

TV Marti programming, a mixture of U.S. news and old TV shows is broadcast in the pre-dawn hours. The transmitter is a mini-blimp tethered 10,000 feet in the air off the coast of Florida. The balloon has broken from its tether several times.

During the panel meeting, Haratunian asked: "Why are we wasting our time and money trying to send a TV signal through this failed scheme? In a time of budget crisis, there is no justification for this kind of extravagant spending."

In October, Congress appropriated \$7 million for TV Marti for 1994, withholding \$2.5 million pending the panel study into the service's effectiveness.

An older radio service, Radio Marti, has been in existence since the mid-1980's.

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(cont'd from pg. 11)

- a current summary of TV programs, updated during the course of the program;

- an electronic newspaper;
- an electronic program guide.

In operating the multimedia system, the video, audio and other data stored in the receiving station are continuously updated via a digital transmission link. Because of the sophisticated data handling of the software, interaction among the stored information suggests a much larger data base than the accompanying data rates would naturally indicate.

Multimedia broadcasting will become possible as high capacity digital services are made available to consumers. Within the conventional NTSC environment, the National Data Broadcasting Committee, a joint committee of NAB and EIA, is working to develop standards for delivery of high-speed data using the NTSC television service as a service under consideration by all-digital advanced television service as a delivery medium. For the all-digital advanced television service under consideration by the FCC, multimedia broadcasting is being discussed as a potential ancillary use of the digital channel capacity.

Computer-based forms of broadcasting could become an important op-

tion for broadcasters in the future. The Sveriges Television demonstration of multimedia broadcasting at NAB '94 will show that there are few technical barriers preventing television broadcasters from becoming multimedia providers and offering new, improved and unique broadcasting services to the public.

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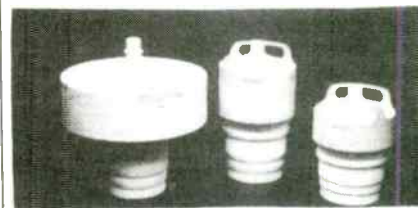
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- ALL CARDS PRE-TESTED UNDER ACTUAL BROADCAST CONDITIONS

LENGTH	A-2 300, M.C. (Std. tape)	AA-3 (HOLN tape)	AA-4 (Super-Hot)	Scotchcart (Mastering tape)
10 sec to 90 sec	\$2.50	\$2.75	\$3.35	\$3.40
100 sec to 4.0 min	\$3.00	\$3.35	\$3.85	\$3.90
4.5 min to 7.0 min	\$3.30	\$3.85	\$4.10	\$4.25
7.5 min to 10.5 min	\$3.70	\$4.25	\$4.95	\$5.25

Replacement of pressure pads extra when needed.  
Like-new cart 90 day warrantee

Due to the increased cost of bulk tape we must increase our prices on rewind cartridges.

**Ship To:**  
**ELECTRONIC INDUSTRIES**  
19 E. Irving Ave.  
Oshkosh, WI 54901

## PORTABLE STEREO MIXER

# Never Before Have We Made So Much Noise About Something So Quiet.

The original Shure FP32 set the standard in field production for portable stereo mixers. Now, with the new FP32A, you can count on getting even less. Noise, that is...**30dB less!** In fact, the FP32A is so quiet and improved that it's perfect for use with DAT and other digital recording media.

### Professional Mixing You Can Take Anywhere.

The Shure FP32A is a 3-input, 2-output portable mixer specifically designed for:

- Remote audio recording
- Electronic audio recording
- Electronic news gathering
- Location film production

At just 1.6kg in weight and only 184mm x 162mm x 59mm in size, the FP32A easily goes everywhere. And operation anywhere in the world is never a problem, either. Two 9V alkaline batteries will operate the FP32A for at least 8 hours. Or it can be powered by any 12 to 30 VDC power supply, such as an automotive battery, rechargeable belt pack, or an AC to DC converter.

### So Many Features In So Little Space.

No other portable stereo mixer offers comparable performance and as many features in such a compact package. The new FP32A gives you all the features of the original FP32, plus:

- Dynamic range of over 100dB.
- 48V phantom, 12V phantom and 12V T (A-B) power.

- LED indicators of input levels, output peaks, limiter action, and low battery.
- Pop-up pan pots.
- Link switch to couple inputs 2 & 3 into a stereo pair.
- Mix bus to connect two FP32A mixers together.
- Headphone monitoring mode switch and headphone MS stereo matrix.
- Monitor switch to route mixer or Monitor in signal to headphones.
- Internal DIP switches for over 4,000 customized set-ups.
- In all, more than 40 new features and improvements.

### Designed And Built in the USA By Shure.

Since 1983, broadcast and production engineers have relied upon Shure Field Production products. All FP products are designed to withstand the most extreme real-life operating conditions. You can depend on every FP product for ruggedness, reliability, and outstanding audio quality.



# SHURE®

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