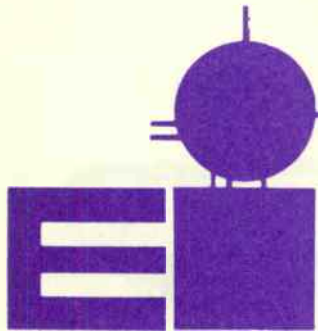


March/April 1993

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Special Technical Exhibits At NAB '93 To Showcase Radio And Television Developments In Technology

Special technical exhibits that showcase the latest technological developments in radio and television will be featured at NAB '93, the National Association of Broadcasters' annual convention in Las Vegas, April 18-22. The special technology exhibits will include displays and/or demonstrations of: data broadcasting, Radio Broadcast Data System (RBDS), advanced closed captioning systems, ghost canceling, wide screen NTSC television receivers and new Emergency Broadcast System (EBS) devices.

Data Broadcasting, a technology by which additional data are sent to the television or radio receiver with the broadcast signal, can offer broadcasters potential new revenue opportunities. This additional data can have many and varied uses ranging from closed captioning and interactive television programs to paging services and financial information. Interactive Systems, Jeen International, Cheetah, Norpak, and WavePhore will demonstrate technologies for broadcasting digital data over NTSC television channels.

Additionally, the Electronics Industries Association (EIA) will show a technology called Television Data Systems (TVDS) in the advanced closed captioning systems exhibit. TVDS is a data broadcasting technology that uses excess capacity in the Closed Captioning (CC) system to transmit a so-called Program ID service to TV viewers. This new technology, which will be shown in an actual over-the-air demonstration, would enable TV broadcasters to encode their call sign, network

affiliation, and other information about the programs being aired (such as an electronic "TV Guide") into the TV signal vertical blanking interval (VBI) for display on home TV receivers.

With the advent of Congressionally mandated closed caption decoders in all TV receivers 13 inches and larger beginning in July 1993, Program ID may be available within the next year.

Several manufacturers will have on display encoders and radio receivers designed for the U.S. Radio Broadcast Data system (RBDS or RDS). The RBDS system delivers a series of digitally encoded signals that can be used to provide a broad array of data and information to radios listeners such as station information display (call letters, slogan, dial position), automatic translator identification and tracking, format tuning information and traffic report switching. Several Las Vegas radio stations will transmit data to the receivers displayed. Companies participating will be: VG Electronics, Rohde & Schwartz, RE Instruments Corp., Aaccess USA Corp., Gemstar Development Corp., TELL and Coupon Radio.

Philips Laboratories, Philips Broadband Networks and Tektronix Corp. will demonstrate ghost canceling technology using the new voluntary standard for ghost canceling set by the Advanced Television Systems Committee in 1992. Ghost canceling improves the television picture by eliminating shadows or "ghosts" sometimes seen around objects on the TV screen.

Equipment shown will include signal

insertion generators for the Ghost Canceling Reference (GCR) signal for broadcast stations, professional ghost cancelers for cable headend and translator station pickup of over-the-air broadcasts and the first display ever of large-screen consumer television receivers with a built-in ghost canceling feature.

Thomson Consumer Electronics and Philips Consumer Electronics will show new NTSC-quality television receivers with wide aspect ratio display screens. The new display format uses a width/height ratio of 16:9 instead of the conventional 4:3 ratio. These new televisions can display the full wide-screen images from motion picture films transferred to video disc players and other sources.

NHK will demonstrate the latest in advanced television technology at NAB '93. The exhibit at NAB '93 will be located adjacent to the HDTV World Exhibition area in the Las Vegas Convention Center.

The NHK Advanced Technology Exhibit '93 will feature five areas of HDTV research and development projects developed at NHK Research Laboratories, and exhibited at NHK's major annual technology exhibit held in Japan. They are as follows:

First, the HDTV Living Room exhibit will simulate a family living room and demonstrate wide screen HDTV receivers as a home theater.

The HDTV/NTSC Simulcast system, shown as part of the NHK exhibit, enables the broadcast of HDTV pro-

(cont. to page 4)



GORDY DAILEY

Editor's Notebook

As if any of us needs to be reminded that we all continue to grow old faster than we would like to, the retirement of Don Borchert in February help remind me. For those who may not be acquainted with Don, he was the driving force behind the Broadcaster's Clinic which has been held in Madison, WI under different names for about the past 35 or 40 years. It was originally started by a couple of University of Wisconsin professors and Jack Stiehl the chief engineer for WHA Radio and the Wisconsin Network. It was called FM Clinic at that time and was held every fall on the UW-Madison campus. It was a one-day affair and covered general topics related to FM broadcasting, which at that time was kind of the neglected stepchild of broadcasting. As time went on and the originators retired or left, program attendance started to decline. About this time and I'm not sure of the exact date, Don, who had come to the University from RCA, got a group of dedicated and talented broadcast engineers and formed a program committee and turned the thing into a technical seminar. It wasn't long before the allotted space on the campus was too small so it was moved out of town and for a number of years now has taken up residence at the Holiday Inn Southeast outside of Madison. In addition to becoming one of the better technical seminars around it has also turned into a fairly good sized equipment exhibit.

Don has been involved into broadcasting in one way, shape or form for

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about 44 years. He became interested in electronics in high school, attended the University of Illinois, worked part-time at Tung-Sol and did some summer relief work at ABC Radio and TV. He has been a radio-TV engineer, field consulting engineer, equipment rep for RCA and then came to the University of Wisconsin 25 years ago. Don was involved in some major projects at the university, including construction of the new radio/TV facilities at Vilas Hall, installation of the AM transmitter facilities at the Arboretum and new tower and transmitting facilities for WHA-TV. Earlier, Don also spent some time serving his country during WW II in the Navy.

In fact, one of the things Don wanted to do while he was in the service was go through the Panama Canal. Since the Navy didn't see fit to give him the opportunity he had to wait until he retired before he finally got the chance. While he may be officially "retired" he will still be actively involved in some phase of broadcast engineering and is definitely going to continue in coordinating the Broadcaster's Clinic, which this year is scheduled for Nov. 9-10-11 and for the first time will be in conjunction with the Upper Midwest Regional SBE Conference.

Congratulations to Don for many jobs well done and best wishes for a long and enjoyable retirement.

Another recent retiree who is familiar to attendees of the Broadcaster's Clinic, is Phil Bradford of the Chicago office of the FCC. Phil was E-in-C of the Chicago office and was with the Commission for 30 years and retired on Jan. 2. Williford Gray has been designated as acting E-in-C until a permanent replacement is selected.

If you haven't gotten the word via the grapevine yet the FCC has gotten very serious about tower lighting and maintenance during the past several months. A number of fines have been handed out for lighting violations including multiple fines in cases where there are several licensees on one tower. Even though one licensee was designated as the responsible party for seeing that the lighting and marking rules were complied with the other tenants on the tower were held equally responsible when the designated responsible party did not fulfill their obligations. In brief, make sure you comply with the lighting and marking regs for your tower and don't depend on someone else to do it. This would include notifying the FAA of any lamp failures, even though another tenant

(cont. to page 4)

SINE SYSTEMS

Model RFC-1/B Remote Facilities Controller

The Inexpensive Way to "Dial-Up"
Remote Control

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

**New From Sine Systems,
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Digital Cartridge Machine**

**Master Player \$2975.00
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The Dynamax DCR1000 Series features simple cart-like operation and requires little or no training. Its durable, maintenance-free design and use of standard 3-1/2" floppy disks to store high quality digital audio can reduce operating costs at your facility.

The Player has just three front panel buttons -START, STOP, and CUE. A two line by 24 character LCD shows an electronic cart label and a count-down timer. START and CUE are virtually instantaneous. The player also includes an RS-232/422 port for machine control and logging as well as conventional remote control of all functions and indicators.

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.

Up to 16 cuts may be stored on each disk and automatically played in rotation or selected individually from the pfront panel. Diskettes preserve audio perfection over their entire lives and last considerably longer than tape cartridges.

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(cont. from page 1)

grams as well as NTSC programs simultaneously and is expected to be fully adaptable to the U.S. HDTV system that will be selected.

Next, NHK has developed an HDTV Standards Converter which is capable of signal conversion between 1125/60 HDTV signals (SMPTE 240M) and 1250/50 HDTV signals (Eureka HDTV) in real time.

Also to be exhibited is the HDTV 40" Flat Panel Display, a television screen which is sufficiently thin (3" thickness) for a wall-hung display. Availability of a large flat panel display capable of being hung on a wall may be a key element for significant penetration of HDTV into homes.

Finally, the Ultra-High-Sensitive HDTV Camera, which incorporates a greatly improved version of the HARP tube (called Super-HARP), will be shown. The camera features ultra sensitivity (80 times as sensitive as a conventional camera tube) for low-light shooting, high resolution and less image lag.

NAB will also be sponsoring an Emergency Broadcast System (EBS) technology exhibition. As part of the Federal Communications Commission's overall technical and regulatory review of the EBS, the Commission has specified what it calls the New EBS Device. The EBS exhibit will showcase several manufacturers' implementation of the EBS device, as well as other technologies that can be used for emergency alerting. Scheduled to participate are: Sage Alerting Systems, TFT, Storm WATCHER Systems and HollyAnne Corp.

In addition to these technology exhibits, terrestrial digital audio broadcasting (DAB) systems are expected to be demonstrated.

(cont. from page 2)

may have done so, if you don't know it for a fact don't assume. As the saying goes "cover your rear."

In closing I'd like to thank the readers who responded to my request in the last issue to return the reply card. I appreciate the comments. If you didn't respond to the last request please take the time to do so this time. We found there were a number of readers whose mailing address was different than what we had so make sure you put the mailing address on the reply card if it is different from the street address.

FCC Should Use Terrestrial DAB For Introducing New Digital Radio Technology To Public

The introduction of a new satellite radio service, with 30 to as many as 200 channels, "will harm local radio stations, will harm local service, and ultimately, will harm the public interest heretofore so well served by local radio," according to the National Association of Broadcasters.

In comments to the Federal Communications Commission, NAB urged the Commission "to focus on implementing digital audio broadcasting (DAB) throughout the existing terrestrial radio services as the surest and most efficient way to successfully introduce DAB to U.S. consumers." The Association said this would avoid consumer confusion or uncertainty created by the introduction of an entirely new satellite DAB service and ensure a smooth and efficient introduction to the new technology because of the ease with which broadcasters would be able to upgrade.

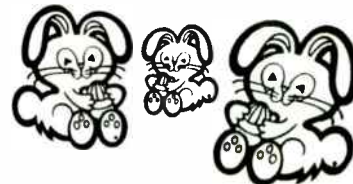
NAB said that there is no need for additional radio service, since the United States already offers the highest level of audio program diversity

available anywhere in the world, nor is there the economic base to support additional radio service.

Noting that the Commission has already acknowledged in its radio ownership proceeding that the radio industry's distressed financial situation stems largely from too many stations in the marketplace, NAB said that "any continued policy of simply adding more and more stations to the commercial radio environment will ultimately deserve the public interest."

NAB said that there has been significant progress in the development of terrestrial in-band, on-channel DAB, and that broadcasters strongly support the development of this technology.

Nevertheless, the Association said that it is premature for the Commission to set standards for in-band, on-channel DAB because the development process is far from complete. Once development has stabilized, NAB stated, broadcasters and receiver manufacturers will have to test and evaluate these systems.



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FCC Okays Request for GCR Signal On VBI Line 19

On October 27, 1992, the FCC announced that they would suspend enforcement of restrictions on the use of line 19 of the Vertical Blanking Interval (VBI). This action allows broadcasters to begin implementing ghost canceling technology using the Advanced Television Systems Committee (ATSC) Ghost Canceling Reference (GCR) signal, which was adopted as an ATSC standard in August, 1992. The suspension of enforcement of restrictions on line 19 is being instituted pending action in a future rulemaking proceeding to codify appropriate changes in the rules.

Since 1974, the FCC Rules have reserved VBI line 19 for the Vertical Interval Reference (VIR) signal (Section 73.682 (a)(21)(iv)). This signal requirement was designed to promote greater uniformity and consistency of color television reception through stimulating production of specially equipped television receivers that could process the VIR signal. However, VIR-equipped television sets, which were only manufactured in any significant quantity by General Electric Corporation, have not been manufactured at all since 1985 and are not in wide circulation.

During the ghost canceling system selection process, the ATSC concluded that VBI line 19 is the best choice for the GCR signal. Also, laboratory tests conducted under the auspices at ATSC confirmed that existing VIR-equipped television sets would not be adversely affected by the presence of the ATSC GCR signal on line 19.

The commission action is a response to a request by the ATSC. On June 26, 1992, ATSC files a Request for General Waiver with the FCC to permit broadcasters to transmit GCR signals on VBI line 19. Immediately following the establishment of the ATSC ghost canceling standard, ATSC also filed a Petition for Rule Making with the FCC on August 14, 1992, requesting that the FCC restrict the use of VBI line 19 for optional, but exclusive, use of the ATSC ghost canceling standard. While the VIR signal no longer serves its original purpose of automatic alignment of television receivers in homes, some television stations do employ the VIR signal in a closed loop configuration around their transmitter link in conjunction with an automatic video corrector device for maintaining proper alignment of the transmitted signal. The rule suspension action taken by the Commission does not require broadcasters to discontinue broadcasting the VIR signal on line 19 at this time.

However, the pending Petition for Rule Making requests that the FCC reserve line 19 exclusively for the optional use of the ATSC GCR. Upon granting this request, broadcasters that are currently using the VIR signal for closed loop transmitter alignment would need to relocate the VIR signal to another VBI line and configure their automatic video corrector to acquire the VIR signal on that new line. In our view, this slight inconvenience is well worth the effort in exchange for the overall benefits of an industry-wide ghost canceling standard.

Philips Broadband Networks (PBN) will soon be delivering professional ghosting decoders for use at cable headends and translator pickup points (contact John Dahlquist, 315-682-9105, fax: 315-682-9006). Also, Tektronix is about to offer upgrade PROM kits for their 1910 and VITS 200 products to generate the ATSC GCR. Other VITS equipment manufacturers that wish to support the new ghost canceling standard should contact Uwe Trode at PBN (800-448-5171, fax: 315-682-9006). For technical information on the ATSC GCR, contact David Koo at Philips Laboratories 914-945-6500. For a copy of the ATSC GCR standard, contact NAB Science and Technology at 202-429-5346 and ask for T-1192.

FCC Hitting Broadcasters Hard With Fines

The FCC issued forfeitures to broadcasters totaling \$101,000 in early February. The fines were issued to 26 TV and radio operators, mostly in the Southwest and Rocky Mountain regions, and follow the FCC's latest station audit.

The highest fine—\$13,150—was issued to KNUS(AM) Denver for non-compliance in areas including, but not limited to, public inspection files, the Emergency Broadcast System, station log maintenance and leaving the station unattended.

Fines were also issued for tower light malfunctions and operating with an expired license.

The FCC is also becoming more vocal about issuing fines. Normally, notices of apparent liability issued to broadcasters from field offices are not released to the general public from the commission's Washington office. Now, the commission plans on releasing public notices on every fine issued.

The NAB has expressed concern about what it says is an alarming growth in fines from the commission.

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- MASH 1-Bit 4-DAC system helps reveal the full potential of the CD medium.
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- 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.



\$169.95

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Programmable Compact Disc Player

- MASH 1-Bit 4-DAC system helps reveal the full potential of the CD medium.
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- 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.



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Programmable Compact Disc Player

- MASH 1-bit DAC for accurate small signal reproduction.
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- Quiet loading mechanism helps suppress vibrations.
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- Function management system for your own customized controls.
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- Synchro Editing for linked operation with selected Technics cassette decks.
- CD editing functions: Peak Level Search, Time Fade, Auto Space, Edit Guide with Jus. Track Edit and Disc Link.
- Remote control with 10-key direct access.
- Random play and auto cue.
- Headphone jack with volume control.

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Quello Named Temporary FCC Chairman

Although changes have been made at the FCC's highest levels, the selection of a permanent replacement for former Chairman Al Sikes is not among them.

Veteran Commissioner James Quello was tapped as the interim Chairman of The FCC in mid-February, succeeding Sides, who exited the post Jan. 19. Commissioner Sherrie Marshall, who has continued to serve past the expiration of her term on June 30, 1992, has requested not to participate in any FCC broadcast or cable proceeding. Marshall is rumored to be headed for the D.C. law firm of Latham & Watkins.

In a prepared statement, NAB President and CEO Eddie Fritts praised Quello's provisional selection to head the FCC. "Jim Quello will make an excellent interim chairman. We are pleased that the Commission will have strong leadership during a period when a number of important issues, including HDTV, DAB and the Cable Act implementation, are at a crucial stage."

Quello is not a candidate for permanent appointment. His selection as interim chairman does not affect the Commission's search for replacement for Sikes, and a number of names have repeatedly turned up as likely contenders for the position. Besides Senate staffer Toni Cook, other names have emerged as front runners, including Washington lawyers Lew Paper and Reed Hundt.

At press time, no information was available regarding a permanent successor to Quello, a replacement for Marshall, or when either of those posts would be filled. Quello presided over his first open FCC meeting in February.

The 78-year old Quello was first appointed to the FCC in 1974. He had been, up to that point, the long-time manager of Capital Cities' WJR-AM-FM in Detroit. He originally joined the station in 1947. Quello was born in Detroit.

1993 NAB Broadcast Engineering Sessions Set

The 1993 NAB Broadcast Engineering Conference, concurrent with NAB '93, April 18-22 in Las Vegas, will feature a series of sessions to prepare radio engineers and their stations for a new era in broadcast technology.

Three radio sessions open the conference, Sunday morning, April 19. *AM/FM Improvement*, features discussions on AM and FM antennas, AM stereo, digital FM exciters, and transmission systems; *Digital Audio*

Systems, features a tutorial on broadcast applications of MPEG, a comparison of digital compression systems for audio, techniques in audio performance assessment; and installation experiences in *Digital Audio Workstations*.

Digital audio is highlighted in the Sunday afternoon session. *Digital Audio Processing* considers the challenges of manipulating digital audio and is followed by a series of presentations on *Digital Audio Storage*.

Monday, April 18, is DAB Day. In the morning, *Technical Considerations for DAB Performance* reports on the impact of multipath on DAB reception. Another paper will forecast initial cost projections for broadcasters to implement DAB. In the afternoon, *Implementation Alternatives for DAB* explores the various DAB systems being proposed for the U.S. and the process of evaluating these alternatives.

Also on Monday afternoon is *Managing in Broadcast Engineering*. This session includes tips for managing your

career, the changing role of the TV engineer, how to train and motivate staff, and cost effective engineering.

Two professional engineering societies are coordinating special sessions at this year's engineering conference. For the first time, the IEEE Broadcast Technology Society will present two sessions on Monday: *Broadcast Standards: Roadblock or Guideposts?* and *Broadcast Standards: Who, How, Why and When?* The Society of Broadcast Engineers returns for the second year on Tuesday, April 20 for SBE Day. SBE offers a full day of technical workshops and seminars designed to give solutions to your most pressing engineering problems. Tuesday's selection includes: *Dealing With RF Interference*, *Designing a Serial Digital Plant*, *Dealing with Disasters*, an *EBS Summit Conference*, and a *Contract Engineers Workshop*.

Wednesday begins with a data broadcasting tutorial for Radio and TV

(cont. to page 7)

From Gorman Redlich Mfg. Co. PORTABLE OFF SITE EBS MONITOR - \$350 TUNEABLE AM/FM RECEIVER AND FCC CERTIFIED DECODER MODEL C.D.

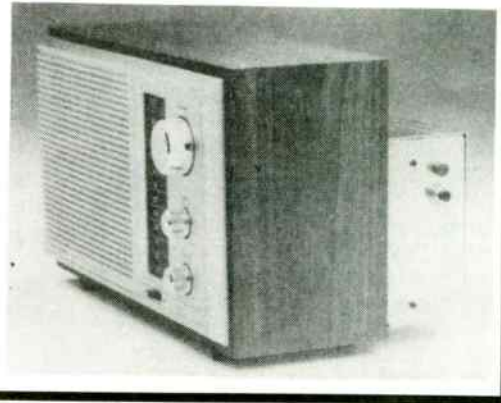
Ideal for use during hours of unattended operation at the studio and transmitter site. With modern remote control equipment the alert message can be put on the air with a telephone.

This Tabletop EBS Receiver is an AM/FM radio with an FCC certified EBS decoder attached. This receiver/decoder system gives full compliance with Federal Communications Commission requirements for radio station control point EBS monitoring.

The EBS Decoder is housed in a shielded metal enclosure at the rear of the receiver. There is a "ready" light, on the decoder, which indicates it is receiving power. When standard 853 Hz/960 Hz EBS tones are received, the light goes out and the receiver's speaker comes on with audio from the EBS originating station. There is a "reset" button to turn the speaker off, reset the EBS decoder, and turn the "ready" light back on.

The receiver is an AM/FM radio which turns on standard 120 VAC power. There are terminals on the back of the receiver for an external FM antenna. The AM portion of the receiver is very good.

Total weight of the unit is 4-1/2 pounds. Dimension are 10-3/4 inches wide, 6-1/4 inches high, and 7 inches deep. Warranty is one year.



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(cont. from page 6)

engineers then splits into two detailed sessions for each field. *Data Broadcasting: Radio* includes papers on NHK's high capacity FM subcarrier system, RBDS, and differential GPS.

Wednesday afternoon offers some help in complying with the latest non-ionizing radiation exposure standards in *RFR Management*. How to maintain worker safety during tower projects, how to take safe RFR measurements, and the latest in protective clothing are discussed.

Using ISDN, T1 and Switched 36 closes the conference Thursday morning giving new alternatives for transporting program audio and making the best choice for each.

(Reprint from NAB Radio TechCheck)

New NAB/DENON Tuner Debuts

The NAB/DENON TU-680NAB AM/FM tuner was introduced in

September at the 1992 NAB Radio Show in New Orleans. Much discussion in engineering circles has centered around the high quality audio reproduced by this tuner. The TU-680NAB was designed to be a quality tuner for listeners desiring wide-bandwidth AM/FM performance and suitable for use in radio station monitoring environments and the home.

Well known audio critic Len Feldman wrote an article to the AM performance of the TU-680NAB, published in the October 21, 1992 edition of *Radio World*, in which he described listening to a simulcast of WQXR-AM/FM, New York. He wrote, "...to our ears (and to those of several visitors to the lab while these tests were ongoing), the audio quality of the AM transmission seemed actually better than that heard when tuned to the FM band."

The superior AM performance of the TU-680NAB, compared to most other radios, is due to the design's conformance with the AMAX standards developed by the NRSC. The accompanying plot of AM frequency response and stereo separation shows typical

AMAX stereo performance. The AMAX receiver recommendations require a frequency response of at least +1.5 dB, -3.0 dB, from 50 to 7500 Hz for home receivers and tuners.

The AM stereo decoder used in the tuner is a C-QUAM decoder manufactured by Motorola — the MC13022. This decoder has the unique ability to be operated in a wide-bandwidth mode, or a variable bandwidth mode. A front panel switch on the TU-680NAB selects the desired mode of operation. With the switch in the "narrow" position, the decoder operates as a variable bandwidth device. The bandwidth of the decoder will vary with the incoming IF signal level. For instance, with very strong signal levels, the decoder's bandwidth approaches that of the "wide-band" setting. However, when the IF signal level is weak, the decoder's bandwidth narrows to a value that allows comfortable listening to weak AM signals that would typically be covered up by strong adjacent channel signals. So, in the variable bandwidth mode, the decoder response may vary from approximately a 6.5 kHz bandwidth down

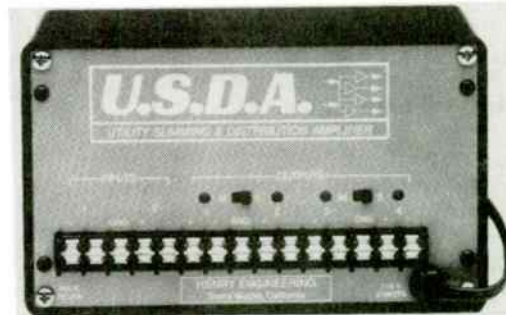
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HENRY ENGINEERING "We Build Solutions"



Price \$195.00

THE UTILITY SUMMING & DISTRIBUTION AMPLIFIER is a unique 2X4 "Mini-D.A." that can be used to combine or split audio signals for distribution. USDA has two inputs (one stereo pair) and four outputs (two stereo pairs). It can be used as a 1X4 or 2X4 DA in mono or stereo. Each stereo output can be independently switched to MONO, so that a stereo input can produce a stereo and/or mono output without degrading the separation of the input signal. Inputs and outputs can be balanced or unbalanced. Input levels can be -20 to +8dBm; gain in adjustable to +20db. Each output will drive a 600 ohm to at least +24 dBm.



Price \$395.00

DigiStor is a digital message storage device intended for storing an audio message for playback via regular dial-up phone line. It will automatically answer the line and play the message when called. DigiStor can also be used for "message-on-hold", or as a utility message repeater. The unit can be programmed to play the message once only, or continuously. Storage time is dependent upon sampling rate. The "standard" DigiStor will record up to 2:08 with "good" quality (suitable for voice or music) or 4:16 with "voice only" quality (user selectable).

DigiStor can be optionally upgraded to add memory time or enhance fidelity, or both.

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(cont. from page 7)

to 4 kHz depending upon incoming signal strength. List price of the tuner is \$600.

(Reprinted from NAB Radio Tech Check)

SBE Day At NAB '93

The following is the updated schedule of events for the broadcast engineering sessions to be held at NAB '93 on Tuesday, April 20, 1993

Morning Television Session Dealing With RF Interference.

Session Moderator: John Battison, P.E., Consulting Engineer

Assistant Moderator: Bob Goza, KMOV-TV

9:00 a.m. STL Systems: Horror Stories and Fixes: George Whitaker, Arlington, TX

9:25 a.m. Designing a Bullet-proof RPU System: Paul Montoya, Broadcast Services

9:50 a.m. Resolving Broadcast-related Interference to Consumer Electronics Equipment: Nathan Hamilton, Hammett and Edison

10:15 a.m. Facility Grounding: Principles and Practices for Reducing RFI: Birken Olsen, Current Technology

10:40 a.m. Coffee Break

10:55 a.m. Frequency Coordination: The Best Solution to Interference: Richard Rudman, KFWB Radio

11:20 a.m. Getting Help with Interference: Hello FCC—Richard Smith, FCC—Richard Smith, FCC

11:45 a.m. MW Reradiation from Simple Vertical Structures: Karl Lahm, Voice of America

12:10 p.m. End of Session

Morning Radio Session Designing a Serial Digital Plant

Session Moderator: C. Robert Paulson, AVP Communications

Assistant Moderator: Gerry Dalton, WTS Bureau Systems

9:00 a.m. Serial Digital: The Road to Our All-Digital Future: C. Robert Paulson, AVP Communications

9:25 a.m. Digital in an Analog Environment: Robin Wilson, Grass Valley Group

9:50 a.m. Error Detection in Serial Digital Systems: David Fibush, Tektronix, Inc.

10:15 a.m. Bit-By-Bit: Real World Experience in Designing Serial Digital Systems: Peter J. Lude, Sony communications Division

10:40 a.m. Coffee Break

10:55 a.m. Integrating Digital Audio: Birney D. Dayton and Charles S. Meyer, NVision

11:20 a.m. Routing Serial Digital Television Signals: Jim Hood, Meret Optical Communications

11:45 a.m. Systems Maintenance: A New Role for the Broadcast Engineer: Carlo Severo, Sony B&P Group, Customer Service & Engineering

12:10 p.m. End of Session

Afternoon General Sessions Dealing With Disasters

Session Moderator: Jerry Whitaker, Technical Writer

Assistant Moderator: Bob Goza, KMOV-TV

1:00 p.m. Hurricane Andrew: Surviving the "Big One": Stephen P. Flanagan, Post-Newsweek Stations, Inc.

1:20 p.m. Lessons Learned from the Loma Prieta Earthquake and the Los Angeles Riot: Jack Popejoy, KFWB Radio

1:40 p.m. The Bay Area Experience: Earthquake and Fire: Speaker TBD

2:00 p.m. Disaster Roundtable: Question and Answer/Discussion Session with all of the Presenters

2:15 p.m. End of Session — Coffee Break

EBS Summit Conference

Session Moderator: Jerry Whitaker, Technical Writer

Assistant Moderator: Bob Goza, KMOV-TV

2:30 p.m. EBS: Where We Go From Here: Dane Erickson, P.E., Hammett & Edison, Inc.

2:55 p.m. Where the Regulators Stand on EBS: Speaker TBD

3:20 p.m. EBS: Implementing the New Technology: Darryl Parker, TFT, Inc.

3:45 p.m. EBS Roundtable: Participants Include all Previous Presenters

4:20 p.m. End of Session

Afternoon Workshop Contract Engineering Workshop

Session Moderator: Chip Morgan, Chip Morgan Broadcast Engineering

1:00 p.m. Panelists:

*Jim Stanley, Stanley Broadcast Engineering

*Barry Victor, The Victor Group

*Chris Imlay, Booth, Freret & Imlay

*Paul Edwards

*Sarah Edwards

SBE Special Events

1:00 p.m.—4:00 p.m. SBE Certification Exams. The exams will be given to pre-qualified candidates in room N111 of the Las Vegas Convention Center

4:30 p.m. SBE Membership Meeting

5:30 p.m. SBE Chapter Chair Meeting

Wisconsin Company Designs Electronic System For African Government

Broadcast Communications of New Glarus, WI recently designed and shipped Phase I of a special electronic system for a government in Africa. The system is now in full operation. The design of Phase II is also complete and ready for shipment.

Since this type electronic of system has never been used in the United States, a joint effort of engineers from around the country met via telephone to discuss the project.

The challenges were numerous including language barriers, power voltage and frequency differences between the two countries, linking portable satellite telephone, and installation at 3:00 a.m., Central Standard Time.

Phase II includes two large permanent electronic installations, controlled by a microwave tower system. Personnel from Broadcast Communications will be traveling to Africa to supervise the project.

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Panel Explores RBDS As Money-Maker At NAB '93

Radio managers can learn how Radio Broadcast Data System (RBDS) technology can help them boost revenues during a panel discussion called The Revenue Potential of RBDS, at the National Association of Broadcasters' annual convention in Las Vegas.

The RBDS system delivers a series of digitally encoded signals that can be used to provide, on the radio receiver, a broad array of data and information — such as station information display (call letters, slogan, dial position), automatic translator identification and tracking, format tuning information, radio text, radio paging and traffic report switching — to radio listeners. The session will explore how these features can raise the profile of the radio station, create exciting new promotions, and make money for the station.

The Revenue Potential of RBDS, aimed at radio station owners, managers and account executives, will feature a panel of RBDS equipment manufacturers and service providers. David Benjamin, president and CEO of Community Pacific Broadcasting will serve as moderator for the session. Panelists include: Bobby Adams, president, AXCESS USA; David Alwadish, president, CouponRadio; John Casey, sales engineer/broadcast products, RE AMERICA; Robert Heiblim, president, DENON AMERICA; Charles Morgan, vice president, engineering, Susquehanna Radio Corporation; Gary Shapiro, group vice president, Electronic Industries Association, Consumer Electronics Group; and Gregg Skall, attorney, Pepper & Corrazini.

The session is scheduled for Monday, April 19, at 3 p.m.

World Trade Center Explosion Knocks New York TV's Off Air

New York City lost most of its local broadcast stations for approximately 11 hours Feb. 26 when the explosion beneath the World Trade Center knocked out the transmitter on the roof, taking out six of the city's seven VHF stations. CBS flagship WCBS-TV, which leases transmitter space on the Empire State Building for backup, was able to broadcast uninterrupted.

Under emergency situations, back-up generators located beneath the World Trade Center would normally take over in the event of power loss. But because of the generators' proximity to several fires caused by the explosion that continued to burn, the Port Authority of New York, which leases the transmit-

ter, shut down the backup system for safety reasons.

Advertising revenue lost during the blackout period, from about 12:30 p.m. to 11:30 p.m. Friday, was estimated at about \$300,000 per station. But station general managers pointed out that actual losses would be considerably less due to the cable coverage and through make-goods with advertisers. "We're going to be able to save".

SMPTE Proposes Official NTSC Television Standard

The January issue of the Society of Motion Picture and Television Engineers SMPTE Journal includes the proposed SMPTE standard (SMPTE 170 M) "Composite Analog Video Signal — NTSC for Studio Applications." This standard, started in 1988, will be the only one fully describing the NTSC television format once it is approved. The current FCC NTSC standard generally pertains to transmission.

The new SMPTE standard provides detailed specifications and tolerances of the NTSC television signal, especially important for modern studio operations. The standard includes and extends the specifications of NTSC documented by the Electronic Industries Association (EIA) in 1977, which were to have been

included in the EIA Standard RS-170A, an update to the 1953 RS-170 monochrome standard. RS-170A never was fully completed as an EIA Standard. The 1977 drawing, which standardized the phase relationship between sync and burst (and commonly referred to as RS-170A), is available as a tentative standard from EIA (Doc. IETN-TSI) as a companion to EIA-170 (formerly RS-170).

The proposed SMPTE standard has been approved for publication by the SMPTE Standards Committee for publication for the purpose of receiving public comments. If no substantial objections are received, editorial comments will be incorporated and the document adopted as the SMPTE standard.

Armed Forces To Carry USA Radio Network

As of February 15, the Armed Forces Radio Network began broadcasting USA Radio Network news and sports programs.

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EIA Delays DAR Hardware Testing

The Electronic Industries Association (EIA) Digital Audio Radio Committee has delayed its digital audio radio systems testing schedule by nearly three months.

The original schedule called upon all proponents to submit hardware to the DAR Subcommittee by April 15. The revised schedule is now July 1.

Gary Shapiro, the EIA's Consumer Electronics Group vice president, said the original schedule always had some flexibility built in. "The revised time line allows proponents more time to complete their system's development, and gives the subcommittee more time to

complete the testing and secure a testing site," he said.

As of early February, no site had been finalized, and much of the testing equipment had yet to be secured.

Five system proposals have been submitted: AT&T Bell Laboratories, Thomson Consumer Electronics (EUREKA 147), Amati Communications, NASA/VOA and Jerrold Communications.

Although the EIA has completed numerous technical standards and has ample resources for such processes, the digital audio radio issue has been highly controversial.

One of the publicized DAR system proposals, USA Digital's Project Acorn, recently pulled out of testing. The con-

sortium of Gannet, Group W and CBS is working on an in-band, on-channel transmission for AM and FM, but decided to pull out because of what it called "broadcaster concerns."

The NAB also is pressuring EIA to relinquish testing of all in-band systems to the National Radio Systems Committee (NRSC), a joint EIA/NAB industry standards-making group.

EBS Testing To Begin

The FCC will be field testing the proposed replacements for the current Emergency Broadcasting System (EBS) technology over the next several months, based on the mandate from recently released dockets 91-301 and 91-171.

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Specifications:

Type: Open-back dynamic
Frequency Response: 20-20,000 Hz
Matching Impedance: 4-16 ohms
Sensitivity: 100 dB SPL
Weight: 115 grams (4 oz)
Cable Length: 3.5 m (11.5 ft)
Connector: 3.5 mm mini plug, 1/4" plug adapter

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EIA And NAB Get Together On In-Band Digital Radio

The NAB and the EIA have come to an agreement on funding and developing technical standards on an in-band, on-channel digital radio system.

The agreement, according to the NAB and the EIA, calls for the NAB's exclusive support for an IBOC, terrestrial approach to digital audio radio. In the past, the NAB has opposed satellitedelivered digital audio broadcasting.

The agreement also says that the NAB will not "consider systems other than IBOC unless IBOC systems are shown to not substantially meet the requirements for terrestrial DAR."

The agreement calls for the EIA digital audio radio subcommittee to test all DAR technical systems, including any IBOC systems submitted to the National Radio Systems Committee, as well as to develop a technical record. The NRSC, which will carry out the testing, will also recommend a single IBOC system if appropriate.

It will also form a subcommittee to determine the planning of IBOC tests.

Funding for IBOC testing will be shared by the NAB and the EIA, with half of each association's contributions being covered by the system's proponents.

The EIA had planned to start testing the different forms of DAB in April, however, it is not known whether the CBS/Gannett ACORN IBOC system will be ready to test then.

WTMJ Seeking Power Increase And Site Change

One of Wisconsin's oldest and best known AM stations recently filed an application with the FCC for a major modification of its transmitter facilities.

WTMJ, which operates on 620 kHz in Milwaukee Wisconsin, presently operates with a power of 5 kw fulltime.

The application proposes to move the existing WTMJ transmitter site to a location 36.5 km south of the present site and operate at 50 KW daytime and 10 KW nighttime. The new array would require four towers daytime and six night. The station currently operates at 5 KW day/night, with one tower day and three night. The new location is somewhat south of the current WISN 50 kw AM array near Union Grove west of I-94 in Racine County, Wis.

If the station is able to relocate at the new power level, it will mark the completion of a quest that began back in the late 1920's, when WTMJ lobbied for a

clear channel and 50 KW from the Federal Radio Commission. But Washington thought otherwise, and the coveted 50 KW clears were all awarded to Chicago. WTMJ then embarked upon an engineering program to develop a directional AM antenna that would allow more power at night without interference to a Florida station also operating on 620 kHz. The result was that WTMJ and St. Petersburg station, now known as WSUN, installed what were quite probably the first directional AM systems in the US back in the 1930's. The current WTMJ Bluemound Road transmitter is one of the most historic sites in Wisconsin broadcasting, having been built in 1927 on what was then rustic farmland, miles from the big city.

As with many stations which are more than about 25 to 30 years old they now find themselves in the suburbs.

WTMJ has always been known as a first-class broadcast facility and has been a pioneer in many technological improvements. (Portions of the above article were excerpted from SBE Chapter 28 newsletter.)



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Heber Springs, AR—Keep it coming. Good, informative articles.

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Manufacturers Oppose NTSC-ATV Set Requirement

Electronics manufacturers support broadcaster calls for flexible use of advanced television (ATV) channels but unlike broadcasters, they advocate a

minimum percentage of on-air time devoted to "true" high-resolution HDTV and oppose any "all-channel" NTSC-ATV receiver requirements.

Opposing the Association for Maximum Service Television's call for application of the All-Channel Receiver Act to ATV, the Electronic Industries Association, Sony Corp. and AT&T argue in comments to the FCC that consumers must be allowed to determine "whether and for how long the incremental cost of dual-mode receivers is warranted."

NAB and manufacturers agree that flexible ancillary services would help pay for ATV and may prove technically feasible within any of the proposed ATV systems. NAB contends that, with equally flexible rules, broadcasters can "reap a substantial portion" of what Frost & Sullivan estimates will become a \$400 million data broadcasting and equipment market by 1995.

But AT&T supports "ancillary advanced video applications such as transmission of multiple compressed HDTV images" only so long as "broad-

casters are required to broadcast at least a core volume of HDTV programming." NAB argues that "it is premature" to judge service demand.

Also commenting, America's Public TV Stations asks the FCC to allow non-commercial stations extra time to prove financial qualifications. The Utilities Telecommunications Council (representing land mobile interests) urges the FCC to make the 15-year NTSC-ATV conversion a "date certain," without periodic reviews along the way. UTC also calls for a new "proceeding to reallocate the VHF reversion spectrum" to private radio.

And Merrill Weiss, vice chairman of the Transition Scenarios Working Party of the Advisory Committee on Advanced Television Service, suggests a single channel "cellular" approach may solve NTSC-ATV transmission tower-loading problems for some broadcasters. He says studies so far suggest step-by-step deployment of antenna "cells" throughout a broadcaster's coverage area could spread costs over time.

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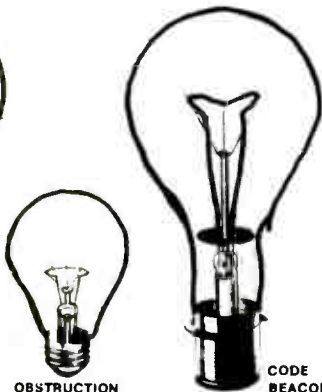
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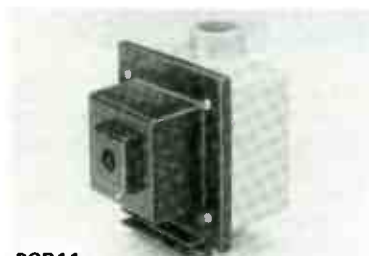
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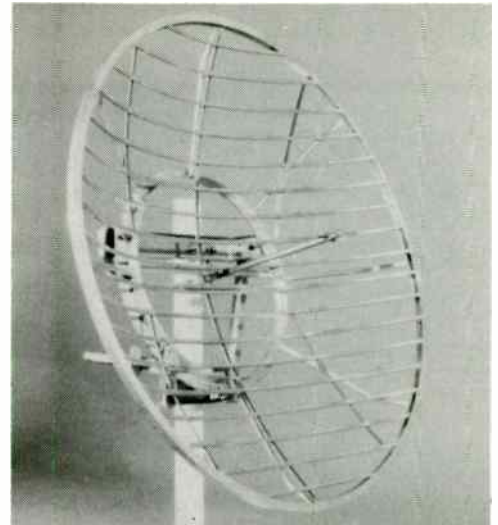
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