

NAB to Feature AM Issues

by David Hughes

Dallas TX ... AM improvement, particularly the work by the National Radio Systems Committee (NRSC) to develop a voluntary pre/deemphasis standard, will be one of the main topics at the NAB's 65th Annual Convention and International Exhibition.

As many as 40,000 people, at least 1,000 more than last year, are expected to attend what is touted as the world's largest broadcast show, to be held at the Dallas Convention Center 27 to 31 March. This year's theme is "Broadcasters ... Serving Local America."

According to NAB officials, over 600 broadcast equipment companies will show their wares on the two exhibit floors of the convention center, which features approximately 300,000 square feet of space. No figure on the total number of booths that will be at the show was available.

One of the convention's main highlights, the NAB's 41st Annual Broadcast Engineering Conference, will feature a dozen radio-oriented sessions featuring more than 100 papers covering a wide range of topics.

As far as the structure of the convention is concerned: "No big changes are



The 65th Annual NAB Convention runs at the Dallas Convention Center 27-31 March

planned for this year's show," said NAB News Bureau Director Bob Hallahan.

However, the show has been bumped up one day. Instead of running from Saturday thru Wednesday, the 1987 event will start on a Friday and end on a Tuesday.

The usual Sunday opening will take place this year on Saturday, with closing ceremonies occurring on Tuesday evening instead of Wednesday afternoon.

Hallahan said the NAB will have more buses to shuttle attendees and exhibitors between the convention center and the 50-plus hotels booked for the event in

the Dallas region. Last year, many people complained of long lines and overcrowding.

The decision to advance the show by one day will give exhibitors four full exhibit days, with the floor open on a regular basis from 9 AM to 6 PM Saturday thru Tuesday. In previous years, the exhibit closed mid-day on the closing day of the show.

Product trends

As usual, lots of new products will be featured on the floor. New R-DAT and S-DAT digital recording systems promise to generate a lot of interest, as do the digital store and playback gear which will also be shown by a number of firms including Gotham Audio and For-A.

Several firms have announced new gear that will conform to the new NRSC AM pre/deemphasis standard. Orban Associates will unveil a new audio processor that conforms to the new curve, Circuit Research Labs will show new interface boxes, and Texar has a new curve-compatible AM modulation controller.

Lots of new CD gear will also be featured including software for cue and control, new CD jukeboxes, as well as new libraries and automation systems.

New antennas will also be displayed. Pinzone Communications will feature an AM antenna that limits skywave emissions, while Shively Labs plans to unveil an FM model that limits downward RF radiation.

While sources indicated that FMX gear would be featured in a set aside demonstration area, interest in it appears to be decreasing.

Several firms have indicated they had shelved work on the system. However, a handful of other firms said their non-FMX generators did feature a port that could allow the connection of an FMX module in the future.

Sessions

Bumping up the show one day will not only increase floor hours, but will also force a shift in engineering sessions. The old early-bird Saturday engineering sessions, which began a day before the show officially opened, will now take place on Friday.

The technical conference, organized by NAB Engineer Ed Williams, begins at 10 AM Friday, with sessions also slated for *(continued on page B-8)*

Exhibitors Get Help

Dallas TX ... In response to a rather long list of complaints from exhibitors about the 1986 convention, the NAB is planning to have several roaming floor managers at the 1987 show to help solve exhibit-related problems.

Also, the 1987 show will be long-time Convention Manager Ed Gayou's last. According to Henry Roeder, the NAB's convention and meetings director, Gayou will be retiring this summer.

Although NAB officials would not comment at RW's press time, sources indicated that Gayou's replacement will be Rick Dobson, who has handled computer trade shows in the past.

Those sources also indicated that the NAB's convention operations will be relocated from their current location in St. Louis to the association's Washington DC headquarters.

Floor managers

At least "three or four" floor managers will help exhibitors remedy problems during booth set-up, tear-down and during the four-day Dallas show, according to Al Fisher, chairman of the NAB Exhibitors Advisory Committee, which is made up of representatives from many of the firms that exhibit at the NAB show.

In past years, exhibitors had to take their complaints to the exhibit manager's office at the convention center.

Past problems ranged from lack of air-conditioning service during booth set-up and tear-down, lax security, infrequent shuttle bus service between hotels and the convention center, poor condition of restrooms, broken escalators and below-par food services.

Fisher said the idea for the floor managers evolved at a November 1986 meeting between the exhibitors committee and NAB convention officials.

At that time, the association said it would work to remedy past problems, particularly security problems, he added.

"The complaints were addressed in a positive way," Fisher said.

He added that exhibitors had generally positive feelings about the NAB's decision to move the show up one day, now running from Friday to Tuesday instead *(continued on page B-16)*

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Transmitters, T & M Gear to Be Unveiled

by David Hughes

Dallas TX . . . New solid state transmitters, the latest antenna designs that include an anti-skywave AM antenna and an FM antenna that reduces downward radiations, and new STL equipment highlight the new transmission-related products that will be shown on the NAB show floor.

Transmitters

In the transmitter field, Nautel, in booth 2658, plans to highlight its AMP-FET series of solid state modular AM transmitters, ranging to 50 kW. The firm will also unveil the AMPFET 1 with five power levels for daytimers.

Continental Electronics, booth 3200, would not divulge information about new products it was planning to exhibit at the NAB show.

The company did indicate that it

In addition, CSI will show its line of established FM transmitters—the T-20-F1 and the T-25-F1—as well as the T-10-A1 AM transmitter.

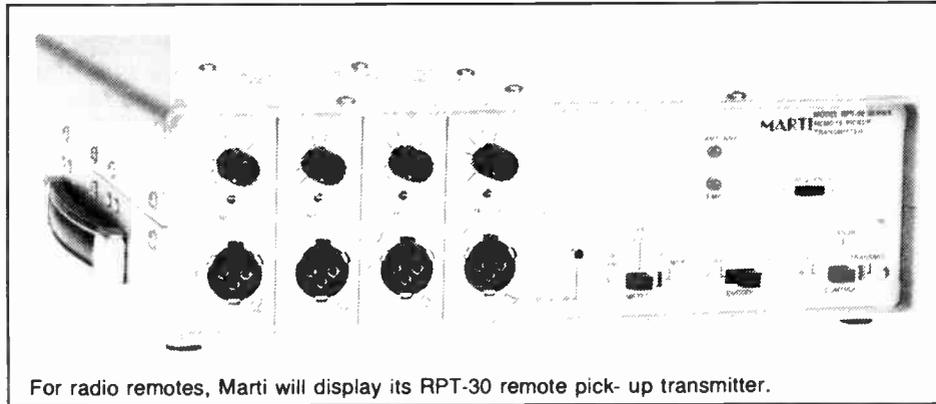
Harris, booth 3136, plans to unveil its FM-25K1 25 kW FM transmitter in addition to its line of established FM and AM transmitters and antennas.

The firm also plans to show its new SiteLink 950 MHz aural STL for radio applications in addition to its existing line of microwave gear.

CCA is scheduled to show its FM-4,000E 4 kW FM transmitter, the 20 G digitally synthesized FM exciter and their 500 W rack mountable FM transmitter.

QEI, booth 3336, plans to show its established line of FM transmitters from 1 W to 60 kW.

Barrett Associates, booth 2768, plans to highlight its line of reconditioned broadcast equipment.



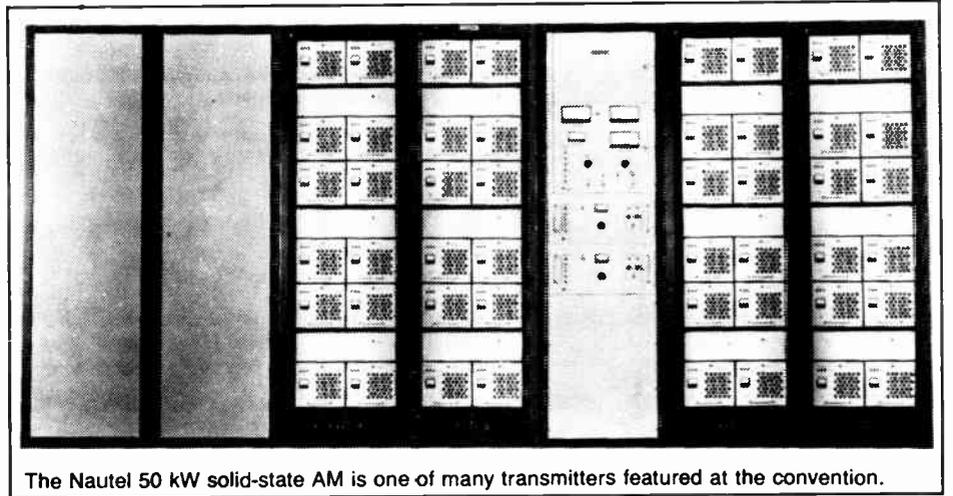
For radio remotes, Marti will display its RPT-30 remote pick-up transmitter.

would feature its full line of AM and FM transmitters, FM antennas and audio equipment.

CSI Electronics, booth 3418, will unveil several new products at the show including the T-40-F2 40 kW FM transmitter that is single-ended and uses a grounded grid tetrode for stability and high gain. The firm will also show the new CSX-20F exciter.

The firm will also feature two products from Jasoni—the "Tempsenz" temperature sensing device for remote transmitter housing, and the "Tapesenz" testing unit for tape machines.

RF Technology, booth 2809, plans to emphasize ENG at the show. It will feature several new products including the UPL-200 Ultra Portable Transmitters and the Flashback range of low-cost



The Nautel 50 kW solid-state AM is one of many transmitters featured at the convention.

ENG transmitters.

Regarding exciters and generators, Motorola will show its Model 1300 C-QUAM stereo exciter, the Model 1310 C-QUAM stereo modulation monitor, the MC-13022-P C-QUAM IF decoder IC and the MC-13024-P C-QUAM personal portable stereo decoder IC.

Delta Electronics, booth 3488, plans to show its new Model AMP-1 AM stereo matrix audio processor and the RC-3A receiver generator, an improved version of the RG-3. The firm will also show its line of phase monitors, coaxial switches and impedance bridges.

Kahn Communications plans to show the POWERSide, which increases coverage of AM stations in high noise areas, the Good-n-Loud, a low-distortion means of modulation for AM stations, and the "Flatterer," a patented method for broadbanding AM antennas.

STLs

As for STL gear, TFT, booth 3420, said it may unveil a new frequency agile RPU at the show, along with a new EBS AM/FM system with time-remaining clocks. The firm will also show its established line of aural STL models 8300, 7700 and 8600, as well as its full line of EBS systems.

The new PCL-600 STL will be shown by Moseley Associates in booth 3202. The firm also plans to show its new MDU dial access remote control, as well as established products including the MRC-2 and MRC-1600 remote control systems, and the PCL-606 STL.

Marti Electronics, booth 3496, will introduce two new products at the show—the RPT-30 remote pickup broadcast transmitter and the ATS-15 automatic transmitter switcher for STL/TSL. Marti

will also feature narrowband and standard bandwidth aural stereo STL and RPU systems.

Antennas and accessories

On the antenna forefront, Pinzone Communications Products, booth 2411, plans to unveil its new CPG AM anti-skywave antenna. The unit, a physically low profile antenna (nominal height 30') is capable of 6 to 12+ dB gain in the azimuthal plane.

New antennas with ideal (cosecant nullfill) vertical patterns will be unveiled by Tennaplex Systems in booth 2812. The firm will also be featuring its new multi-station combiner that is capable of handling up to 1 MW of prime power.

Tennaplex will also show its series of FM panel antennas with true circular polarization.

Shively Labs, booth 2442, will unveil its new half-wave spaced FM antennas designed to reduce downward radiation. Other new products include vertically polarized FM antennas designed for educational band stations prone to cause Channel 6 interference, as well as custom FM antennas with horizontal/vertical ratios for special license restricting situations.

LeBlanc and Dick Communications, booth 2417, plans to highlight its FM antenna line, as well as tower products for up to 2000'.

Dielectric Communications, booth 3436, will feature its FM ring and panel antennas, coaxial transmission line, as well as FM filters and combiners.

Magnum Towers plans to show its established line of radio, TV and microwave towers in booth 2901.

Utility Tower Company, both 3585, plans to show its AM, FM and TV tower

(continued on page B-18)

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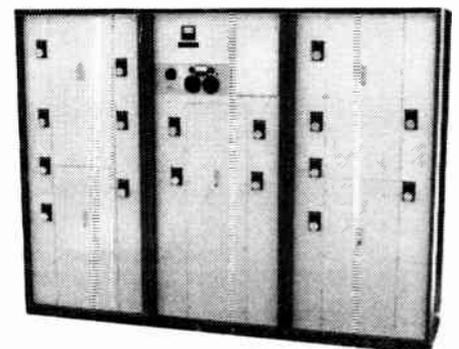
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Digital Audio Tape Makes Debut

by Alex Zavistovich

Dallas TX ... A new record and playback technology for broadcast audio, Digital Audio Tape (DAT), is catching the attention of equipment manufacturers as a possible successor to NAB cartridges in AM and FM broadcasting.

DAT technology allows the recording of several hours of digital stereo sound on an approximately 4 mm wide tape. Two different recording systems have been developed—stationary head (S-DAT) and rotating head (R-DAT)—and each has its own supporters.

The NAB convention may become a proving ground for the new technology, as equipment manufacturers introduce new digital recording products and discuss the advantages of the systems. Other manufacturers will be showing solid state digital applications for memory in broadcast audio equipment.

On 31 March, during the convention, Sony VP/Product Operations Peter Dare will deliver a presentation provisionally entitled, "Using the R-DAT Digital Recording System in Broadcasting."

According to Dare, "R-DAT is likely to replace the NAB cassettes currently in use in AM and FM stations." The technology, he said, "will probably lead to FM stations using R-DAT instead of reel-to-reel tapes."

R-DAT is the "first significant change in broadcast audio after about 20 years of cassette and reel-to-reel analog re-

“ “

'R-DAT is likely to replace the NAB cassettes currently in use in AM and FM stations.'

” ”

recording," Dare said. The process affords "fantastic (recording) quality with low maintenance," he added.

Sony's commitment to R-DAT technology will include a presentation at the NAB of a prototype professional portable recorder, the TCX-663. The unit has a search and shuttle speed approximately 200 times the normal playback speed, Dare said, and has a selectable 48 or 44.1 kHz sampling frequency.

Dare was enthusiastic about the future of R-DAT technology, saying that the system was "supported by roughly 87 manufacturers." He suggested that product offerings and prices are liable to become very competitive in the future.

The trend toward R-DAT technology in broadcasting was also acknowledged by Dave Burns, national sales manager for Allied Broadcast Equipment. Burns noted, however, that there are several problems with the innovation.

When a rotary head machine is put on pause, there is the possibility of "either rubbing a hole in the tape or destroying the head." What is needed, he suggested, is a "tape lifter" to draw the tape away from the head when the unit is on pause.

R-DAT machines also need to have the SMPTE code "impressed right on the machine to advance to the exact frame," Burns said. He was skeptical about out-

board SMPTE encoders, suggesting they may cause the R-DAT machines "to lose value."

Still, Burns was not as enthusiastic about the future of R-DAT as Dare, commenting that "no one has come up with an all-purpose solution like the recording cartridge."

Bill Parfitt, advanced market development administrator for International Tapetronics Corporation/3M, added that "digital is the way of the future, but analog products will be around for some time."

"The costs of digital equipment are too high right now," Parfitt maintained. However, he added, ITC/3M will be con-

tributing a product to the digital arena: the 3M HCDA 3000 cart machine will be introduced at the NAB show.

ITC/3M would not provide details on the machine, but industry insiders speculate the unit will be based on S-DAT technology and will use non-NAB cartridges.

Still, not all the developments in digital audio lie in R-DAT technology—at least one manufacturer sees a move towards solid state equipment for storage.

Dave Evers, Broadcast Electronics' sales manager of automation products, said there is a "trend toward no moving parts" in audio equipment. He stressed that "nonvolatile solid state storage in

full bandwidth, with full audio performance, is the way of the future."

In keeping with that philosophy, BE has released the DV-2 Digitalk cart player, which Evers maintains is "a solid-state replacement for cart machines."

Evers adds that there are other forms of storage currently being experimented with, such as floppy or hard disc. Although volatile, solid state RAM has a more dense memory than any other system, he said.

For more information, contact Peter Dare at Sony, 201-833-5241, Dave Burns at Allied, 317-962-8596, Dave Evers at Broadcast Electronics, 217-224-9600, or Bill Parfitt at ITC/3M, 309-828-1381.



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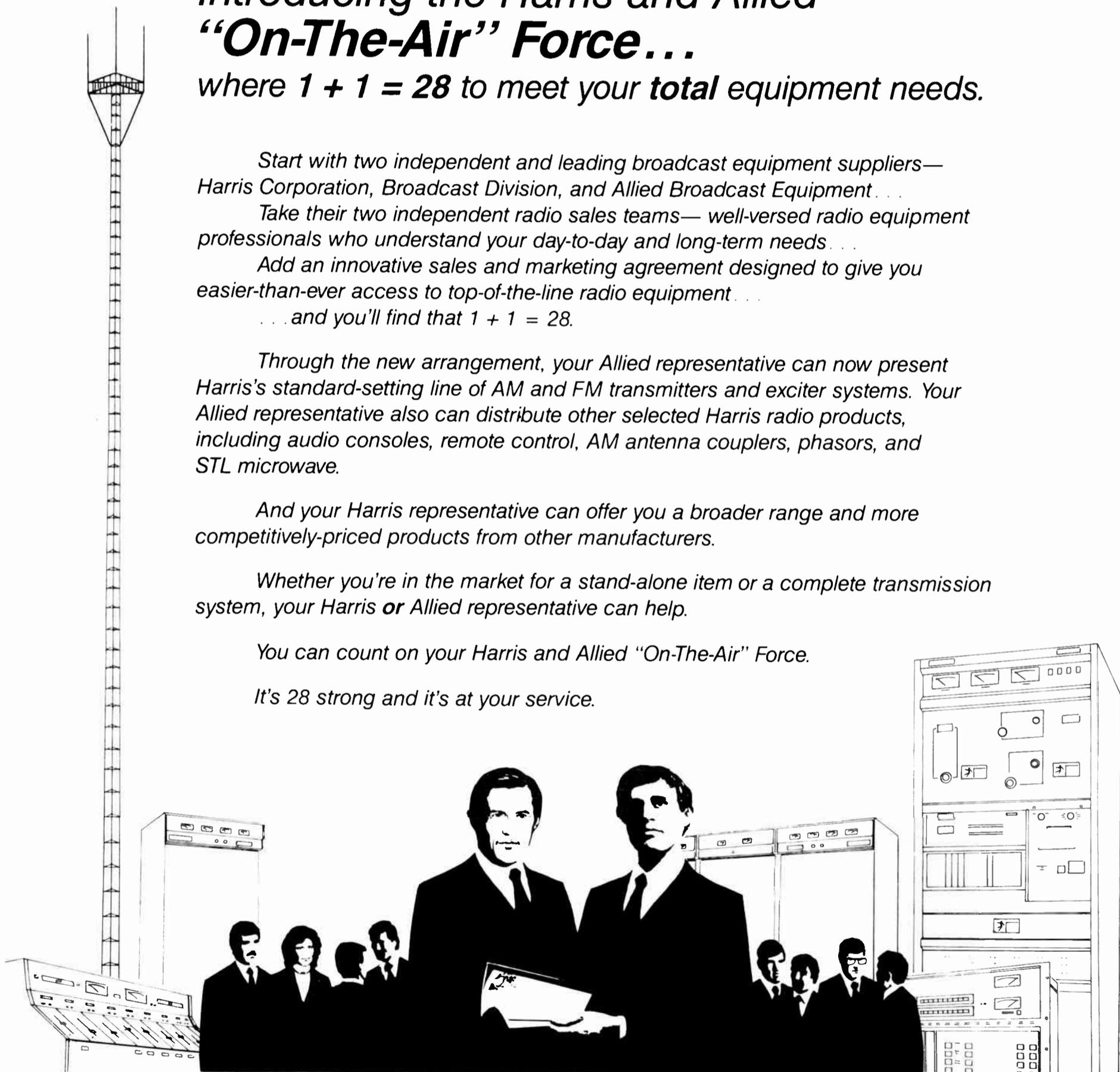
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May Push FMX Despite Doubts

by David Hughes

Washington DC ... Despite increasing doubts from equipment manufacturers about its utility, sources indicate that the NAB may be planning a major, possibly final push of the FMX FM stereo coverage extension system at the Dallas show.

Although NAB Science and Technology VP Tom Keller, who co-developed FMX with Emil Torick, formerly with the now defunct CBS Technology Center, would not comment publicly about a possible FMX push at the show, sources indicated that new details about FMX research would be available at the March NAB convention.

While Keller admitted that the new voluntary pre/deemphasis standard will be the main NAB organized radio demonstration at the show, there was

talk that FMX gear will also be on formal display.

At RW's press time in late February, however, Keller said he could not provide any details on the NAB's attempts to find a new corporate partner to replace CBS's share of the FMX testing and research.

In a budget cutting move, CBS closed its Stamford, CT-based tech center in December 1986. Since then, Torick and a small band of FMX researchers have continued to be supported by CBS at a separate division in nearby Greenwich while negotiations take place to find a new firm that would be interested in continuing FMX development with the NAB.

Keller said he remains optimistic about finding a replacement for CBS. He told RW in late 1986 that the NAB was talking to a number of firms—everything

from "small venture capital firms to very large, established companies."

As of mid-February, he said there was nothing new to report regarding the search for a new FMX partner.

While Keller did not reveal a date by which a new partner could be announced, he indicated an announcement would probably be made by the time the convention starts on 27 March.

At the NAB show, Torick is scheduled to present a paper entitled "an update on the status of the development of the FMX improved FM transmission system."

At the time the CBS Tech Center closed, Torick said he would present his findings on multipath problems and answer some manufacturers' design questions at the convention. Torick could not be reached for comment.

Manufacturers see clouds

Despite the relatively upbeat FMX forecast from the NAB, manufacturers of FMX generators indicate far less enthusiasm. Rather than producing new FMX generators as promised last year, most firms are limiting their involvement with FMX to a mere plug-in module to non-FMX generators.

For example, at the 1986 NAB show, Aphex Systems had indicated that it was working on its Model 902 FMX generator. But those plans have, for the immediate future, been abandoned.

While Aphex Product Manager Jon Sanserino said his firm may unveil a new stereo generator—tentatively dubbed the "Ultra-linear"—at the NAB show, it will not feature FMX *per se*. The new unit will, instead, have a port for an FMX add-on should a station decide to add it in the future.

"Essentially, we have suspended our work on FMX," Sanserino said.

In light of the CBS decision to pull out of the FMX project, Sanserino added that Aphex is "waiting to see what will happen with FMX" before it decides whether to continue its development of

new FMX products.

He pointed to the results of several on-air FMX tests last year that indicated multipath-type interference caused by quadrature rejection problems on some receivers. One station, Chicago's WFMT, discontinued the tests after only a few days because of listener complaints.

"As long as there is a question about multipath problems, I really doubt that there will be much interest in FMX," Sanserino added.

Inovonics decision

The Aphex decision to abandon plans for an FMX-only generator is similar to **(continued on page B-8)**

NRSC Subgroup to Meet at Convention

by Alex Zavistovich

Dallas TX ... Although the NRSC will be using the NAB convention to publicize its newly-approved preemphasis and deemphasis standard, it will also meet the day before the convention's official opening to continue its study into RF emissions standards.

The NRSC subgroup on methods and procedures will convene 26 March to discuss masking of spurious emissions from AM antennas and transmitters, according to NAB Engineer Mike Rau. The meeting will be the second subgroup meeting to address the issue; the first was held in late February in Washington, DC.

According to NRSC Co-chairman Charles Morgan, VP/engineering for Susquehanna Broadcasting, the NAB

has agreed to "make an effort to publicize the standard and make broadcasters aware of its desirability."

As part of that effort, a portion of the NAB's session on AM Improvement, to be held 27 March, will be devoted to a report on the voluntary national standard for AM preemphasis, which was approved in early January.

NewCity Communications VP/Engineering John Marino, also an NRSC co-chairman, will discuss the committee's activities over the past twelve months, including the implications of the 75 μ S transmitter preemphasis and corresponding deemphasis.

The report, which will also be presented by Delco Engineer Bill Gilbert, is expected to touch on the subject of the 10 kHz audio filter as it relates to second **(continued on page B-18)**



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See Us at NAB Booth 3587
Circle Reader Service 54 on Page B-31

Studio Essentials Stress Variety

by Alex Zavistovich

Dallas TX . . . The new products to be featured by microphone, loudspeaker and studio furniture manufacturers at this year's NAB convention will provide a tempting array of choices to broadcasters looking to modernize their studios.

Many of the major microphone manufacturers displaying equipment at the show will be introducing innovative new designs in an assortment of mic types, from ribbon and condenser microphones, to the shotgun and even headworn varieties.

Loudspeaker manufacturers will show

a number of new studio monitors and studio furniture manufacturers will also unveil new merchandise, including prefabricated broadcast and recording booths.

Mics and accessories

Available from Beyer Dynamic in booth 2823 will be the MC 740 DJ microphone and the MPC-40 low-profile microphone.

The M700 cardioid dynamic microphone and the MCE-ID miniature condenser microphone will also be displayed, as well as the MC736 MC737-PV short and long shotgun microphones.

Beyer will also present the DT 108 and DT 109 series headworn microphones, the M130, M160 and M260 ribbon mics, and a complete range of dynamic condenser and ribbon microphones, headsets and accessories for professional broadcast studio and field production.

In booth 3354, Gotham Audio Corporation plans to show the RSM Neumann stereo condenser shotgun microphone for sports and ENG applications, as well as the EMT 258 dynamic noise filter for audio recordings and sound tracks. The Gotham exhibit will also show the K&H O98, O96 and O92 self-powered reference monitor speakers.

Sennheiser Corp. will unveil its MKE 42PU cardioid gooseneck microphone in booth 2914. The mic comes equipped with built-in 48 V phantom power. Sennheiser's display will also present a full line of professional microphones, headphones, wireless equipment and infrared listening devices.

On hand at AKG Acoustics' booth number 2454 will be the D-112 Dynamic microphone, with frequency response from 20-17,000 Hz, and 210 ohm impedance.

AKG will also display the C-522 stereo ENG field microphone, and the C-422 stereo X-Y and M-S microphone.

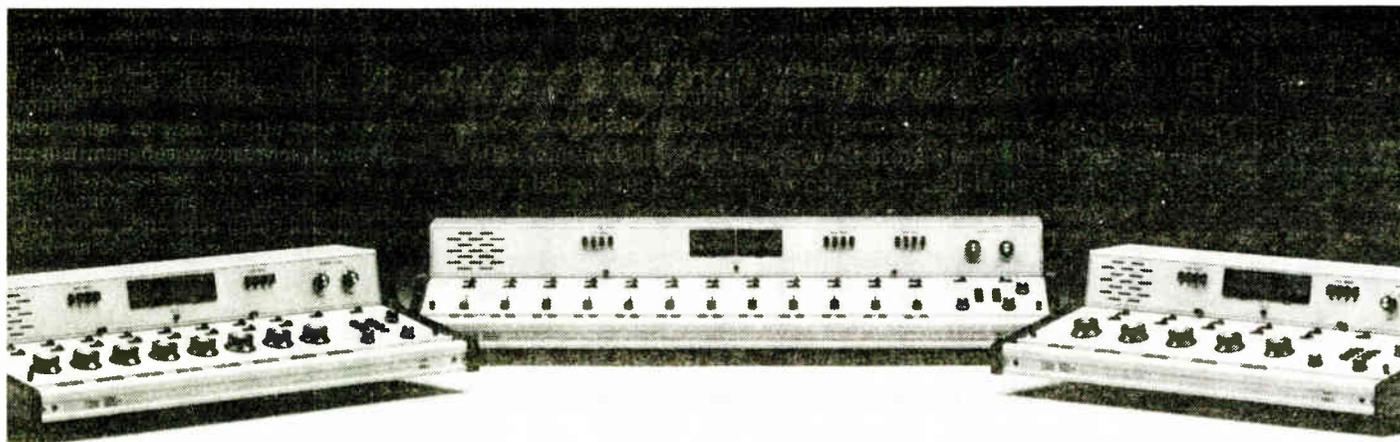
AMX will use booth 2908 to exhibit the SX16 Relay Controller software control panels with LED status display, and the SX series remote control system with wireless RF panels, software multiplexed panels and computer control.

Shure Brothers, in booth 3320, plans to show the SM89 shotgun microphone, the SM series of broadcast microphones and the Shure family of wireless microphones.

The company will also feature the FP series of field production mixers and amplifiers.

Speakers

UREI, in booth 2727, will present its Time-Align studio monitors, featuring the new "C" versions. The company will



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A shoulder-rest headphone set will be one of the offerings on exhibit from Stanton.

also exhibit its line of equalizers, limiter compressors and signal processors.

JBL Professional's display will include the JBL studio monitors with titanium dome diaphragms and the JBL Bi-Radial studio monitors.

JBL's studio monitor loudspeakers with titanium dome tweeters and JBL Control monitors and mounting accessories are also slated to be on exhibit.

Stanton Magnetics' display in booth 3331 will feature the Dyna 30M/SR disco headphone, a single shoulder-rest cup headphone which can be detached from the shoulder rest for use as a hand-held monitor.

Studio acoustics and furniture

A variety of prefabricated broadcast booths, air and news studios and recording booths will be featured at the Acoustic Systems booth, number 2786.

Alpha Audio's Automation Systems Division will show Sonex, Sonex 1, Soundtex and Acoustilead acoustical treatment products.

Emcor Products will display its line of modular electronic enclosure systems, computer support furniture and emission control EMI/RFI enclosures.

In booth 2523, Canare Cable will exhibit the MR202AT 2-conductor flexible multichannel mic cable and the V4S multi-channel coax cable. The company will also show junction boxes, snakes, pig-tails and cable reels.

More CD Players to Be Shown

by Judith Gross

Dallas TX . . . There are two big developments in digital equipment this year, one representing the technology of the future, one with more immediate applications.

The future technology is DAT—digital audio tape—which up until now has been directed towards the consumer market. Two offerings in DAT at this year's show promise to get broadcasters interest, one from Sony and a different use of DAT technology from 3M/ITC.

The more practical digital technology has to do with compact discs. CDs made a strong showing at last year's NAB exhibit, but the lack of hardware aimed at the professional market has been a problem.

Sony introduced R-DAT (rotary heads) professional products in prototype form at the AES show last November. At the NAB show, the company will participate in a session on DAT, and is expected to have a prototype of a professional portable R-DAT cassette player, the TCX-663 at its booth, 3100.

The player looks like a regular portable cassette player, but the cassettes are much smaller. The TCX 663 has a search and shuttle speed which is 200 times normal speed, and selectable 48 or 44.1 kHz sampling frequency.

The other DAT offering at the show has a great deal of mystery surrounding it. 3M/ITC is expected to introduce a new cart machine based on DAT technology, but it may be S-DAT (stationary heads).

The Philips CD player can be configured in a set of one to three units. It features a flywheel cue mechanism.

A new offering in this area comes from Tascam, in booth 3416. Its CD501 resembles the company's popular cassette deck, and features forward and backward cue by search buttons.

It's also a front-loaded rack mountable design. Its pricing, however, is lower than some of the other professional players on the market.

Straight Wire Audio, booth 2518, is featuring an upgrade to its CDQue, the CDQue II. It has a heavier chassis and there are improvements to the cueing and audio circuits. The company is offering free upgrades to owners of the first CDQue model.

One CD-related piece of equipment which has gotten a lot of attention from broadcasters in the past year is the "CD jukebox" or multi-disc player.

The Audiometrics AMCDS 1000A, introduced by Allied Broadcast Equipment last year will again be at their booth, number 3414. It features a 100-disc capacity with random access to any cut on any disc.

The Audiometrics player also features precise cueing capabilities which allow the disc to be cued to the start of the music.

With the difficulties in cueing CD players, and up until this year, the lack of professional hardware, radio stations have needed a way to control CDs for on-air play.

Two systems for CD control were introduced in the past year; one of them is

making its NAB debut, also at the Allied Broadcast booth.

The Touchstone, by Media Touch Systems, is an IBM-compatible computer



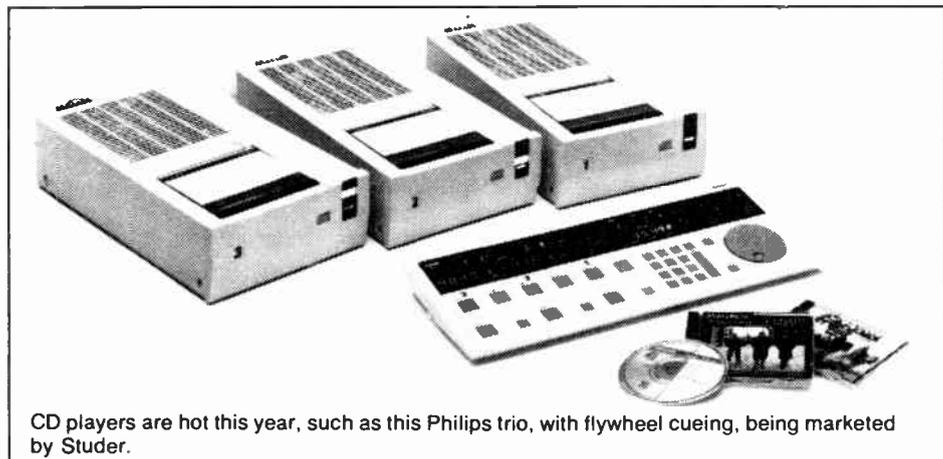
The Audiometrics CD multi-disc player by Allied can handle up to 100 CDs.

system which allows for control of a variety of audio sources, including CD players.

It features touchscreen technology, and allows on-air talent to call up music, actualities, spots and network programs at the touch of a screen. It also ties into the station's other computer systems and produces logs for traffic and billing.

The Touchstone lets talent control levels and fades by running a finger across the screen. CD players can be controlled from the system, and cueing, crossfades and the like can be programmed in.

A similar, but totally software-based system was introduced last year by Ron Schiller Associates. The CD Filer system also allows CD players to be controlled from a PC, and can fade or cue as de-
(continued on page B-12)



CD players are hot this year, such as this Philips trio, with flywheel cueing, being marketed by Studer.

Several companies have found solutions to this problem, and there will be new CD players on display on the exhibit floor.

Another digital area in the past few years has been store and playback machines—or audio computers. Some are still making a showing, but generally they have not met with much enthusiasm from radio stations.

There is, however, one introduction in this area from Broadcast Electronics that has evolved into a product designed to meet some specific broadcasters' needs.

The company is saying little about the new machine, preferring to keep it a surprise until the show.

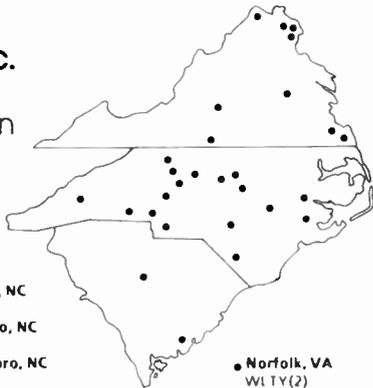
Finally, the popularity of CDs is starting to pay off. There are more players on the market this year.

Studer and Philips are marketing their professional units together, as per the agreement announced at last year's convention.

Studer, booth 3048, is going to introduce an upgraded version of its A725 CD player—the A727, with improved cueing features.

The numbers tell the story.

Auditronics, inc. has delivered more consoles to this region than all others in its class combined.



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- Asheville, NC
WLOS-TV
- Black Mountain, NC
WFGW (2)
- Chapel Hill, NC
WCHL
- Charleston, SC
WCSC-TV
- Charlotte, NC
WLTK
WSOC(3)
WTVI-TV
WWMG(2)
- Columbia, SC
WDPN(2)
- Danville, VA
WDVA(2)
- Durham, NC
WDCG(2)
WDNC
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WFXC
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WFAZ
- Fayetteville, NC
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- Gastonia, NC
WZXI
- Goldsboro, NC
WGBR(2)
- Greensboro, NC
WCOG(4)
- Hendersonville, NC
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- High Point, NC
WMAG(2)
- Laurinburg, NC
WSIS
- Lynchburg, VA
Old Time Gospel Hour
- Monroe, NC
WDEK
- New Bern, NC
WCTI-TV
WSHI
WTFB(2)

- Norfolk, VA
WITY(2)
WJAR(2)
- Raleigh, NC
WKIX(2)
WYYD
WP1F-TV
WPTF
WQDR(2)
WRAL-TV(3)
WRAL(6)
WRDU(2)
WPJL(2)
Capitol Broadcasting (10)
(Group locations not shown)

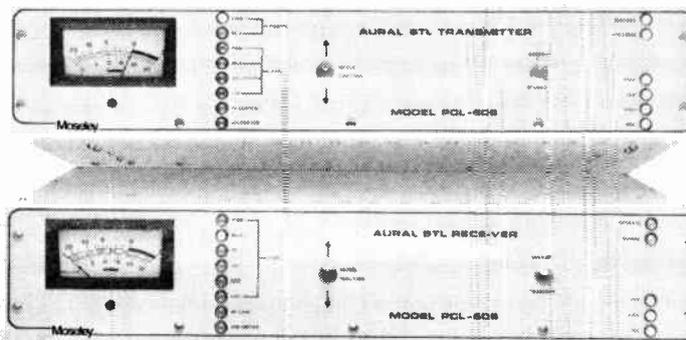
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WRNL(3)
WRVA(3)
WRXL(3)
- Salisbury, NC
WSTP
WRDX(2)
- Tobaccoville, NC
MKB Recording
- Virginia Beach, VA
WCMS(3)
CBN
WNVZ(2)
- Washington, DC
USIA(3)
WETA
Westinghouse
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Show Highlights AM

(continued from page B-1)

Saturday, Sunday, Monday and Tuesday. Engineering workshops will be held Sunday evening, with the traditional FCC Engineers Forum taking place Tuesday afternoon.

"The sessions have always been strong in the transmission area, but we're making an increasing (effort) to add production," said NAB Science and Technology VP Tom Keller. "Next year, we'll probably add even more production. We want to appeal to the entire industry."

On the AM side, in addition to the NRSC standard, hot topics will include modulation and its affects on interference, synchronous transmitters and new reduced skywave antennas.

"AM improvement will be bigger than ever," said Keller. "The NRSC preemphasis standard is definitely the number one issue for AM this year."

A last minute addition to the AM program, according to Williams, is a paper by Washington DC consultant Ron Rackley that will address the problems of keeping, or finding, a new AM antenna site when land costs rise.

"Trying to hold on to seven acres of land in a growing industrial area can be difficult," Williams maintained. The presentation will examine a variety of "alternatives" for an ever increasing problem, he added.

As for FM, details of a new NAB committee that is spearheading "FM im-

provement" will be presented, as will the latest on the FMX stereo extension system. Proponents of higher Class A powers will also make their case during the sessions.

There will also be several joint radio/TV oriented sessions. Topics to be covered include satellite systems, studio construction and acoustics, environmental concerns of broadcasters and the issues surrounding broadcast auxiliary.

According to Keller, a technical demonstration area will be set up—larger than last years'.

On the radio side, the NRSC standard will be the prime demonstration, including a closed-circuit transmission and its reception on a variety of receivers.

Sources also indicated that the FMX system will be a major part of the demo room. At press time, no details have sur-

passed about which firm will replace CBS as the co-developer of the system with the NAB. A replacement is expected to be firmed up by the show.

Ceremonies, luncheons

Apart from the exhibit floor and sessions, many other events will take place during the five-day show. However, at press time, complete details were not available.

The convention's formal opening ceremony will take place Saturday afternoon. NAB President Eddie Fritts will discuss the state of the industry. Entertainment will be provided by Lee Greenwood and Ray Stevens.

The engineering luncheon will take place 12:30 PM Sunday. Rep. Don Ritter, a member of the House Energy and Commerce Committee and the Science and Technology Committee, will be the speaker.

During the luncheon, the NAB Engineering Achievement Award will be presented to Renville McMann, of the recently closed CBS Technology Center, for his work in audio processing, development of the minicam, video noise reduction and high definition TV.

The radio luncheon will take place Tuesday afternoon. The speaker will be Marshall Loeb, managing editor of *Fortune* magazine. The Ham Radio Operator's Reception will take place at 6:30 PM the same day.

The show's closing ceremony will take place Tuesday evening. Entertainment is scheduled to be provided by Ray Charles.

FMX Push?

(continued from page B-5)

one made in late 1986 by Inovonics.

Jim Wood, president of the firm, indicated that plans for the X-tra FMX generator were dropped in favor of providing an FMX port on the company's new Model 705 FM stereo generator, which is labeled "705 FM/FMX." The unit will be highlighted at this year's NAB show.

Like the Aphex Model 902, Inovonics highly touted its X-tra generator at the 1986 NAB show.

While Wood told *RW* that few stations indicated an interest in the FMX module for the 705, he said he still thought FMX had some practical uses. The Inovonics' tests of FMX indicated relatively few multipath problems, Wood said. However, he added that the tests were performed in a valley setting that was not prone to multipath.

Other firms gloomy

Representatives of other FM generators have also indicated a lack of enthusiasm for FMX. Howard Mullinack of Orban Associates said that his firm's FMX work is "on hold," pending a resolution of the CBS pullout.

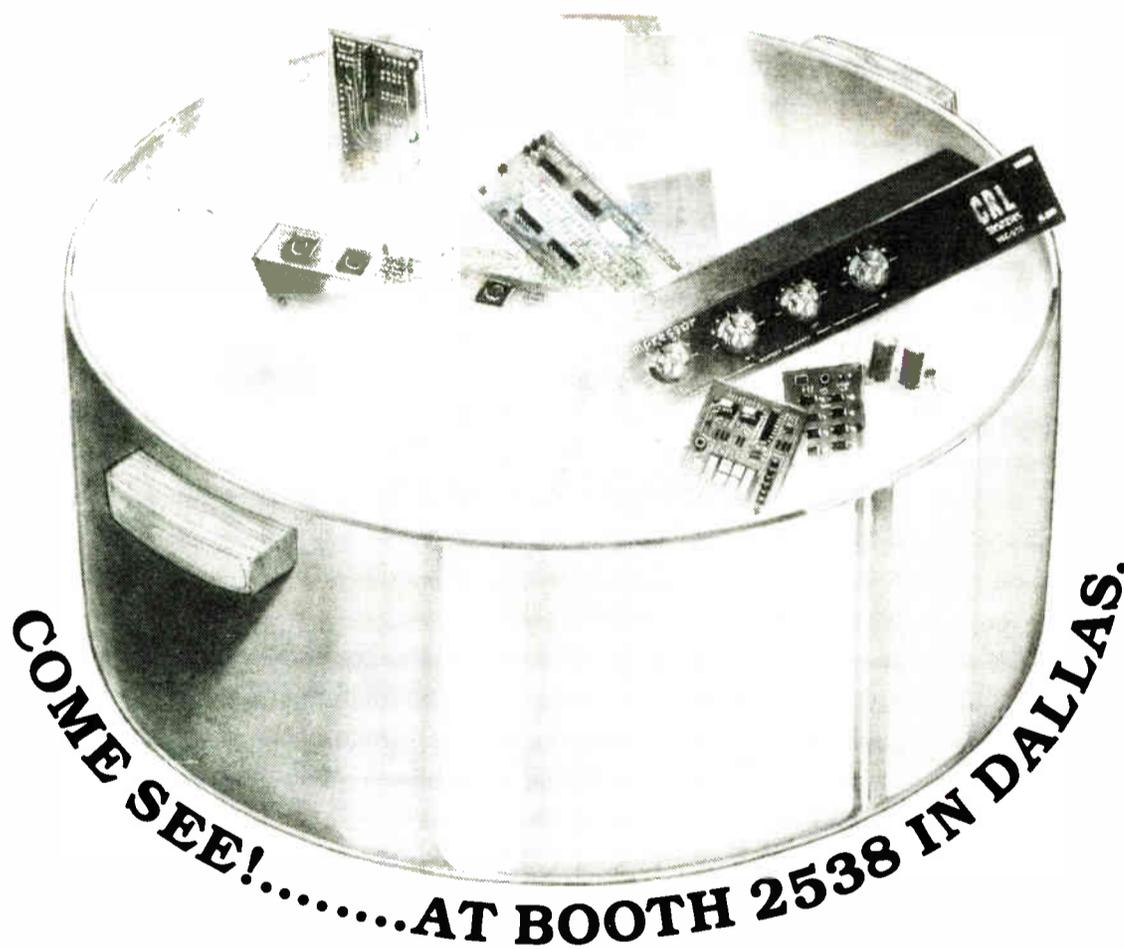
While Orban plans to unveil a number of new products at the March NAB show, conspicuously absent from the list is the Model 8150A FMX generator that the firm said it had been working on last year.

Likewise, Circuit Research Labs (CRL) Sales and Marketing Director Ray Updike said his firm had dropped plans to produce the SG-810 FMX generator, which was announced early last year.

"Our FMX project has been placed on the back shelf," he said. "We are still waiting for (new) data from Torick."

For more information on FMX contact Tom Keller at the NAB: 202-429-5346.

What are the People at CRL Cooking up Now?



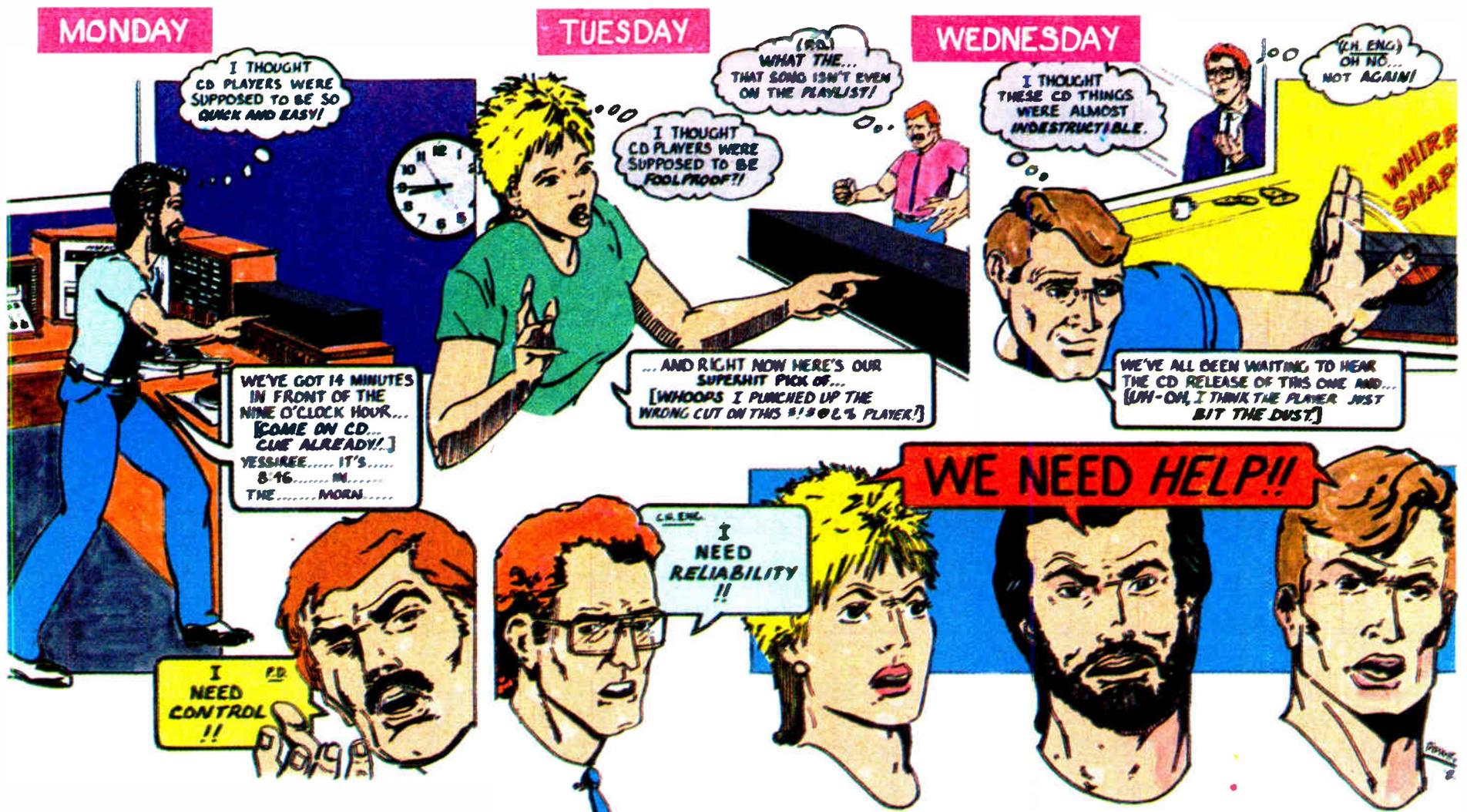
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Several Multiplay units can feed a Touchscreen for prompt access to thousands of cuts on hundreds of CD's. While unit A is playing a disc, the Media Touch controller is cueing unit B, for instant back-to-back segues.

Since DJ's never handle the discs, Multiplay units need not be located in the air studio. Your music library is an ideal location. CD's and mechanism are protected behind a lockable, tamperproof door. The Multiplay is rugged and reliable — over 2000 units are already working full-time in the field.

If you're currently dubbing CD's to cart, the Media Touch CD Multiplay system makes so much more sense! It eliminates the added time and expense, and degraded performance of cart'ing CDs, plus, the Touchscreen is much easier to use.



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Processing Addresses New Needs

by David Hughes

Dallas TX . . . This year's NAB floor will feature new processors for use with the new NRSC pre/deemphasis standard. Orban, CRL and Texar have all announced products that can be used with the new curve.

In addition, lots of other interesting audio processing and related gear will be shown. To name a few, Modulation Sciences will unveil a new spatial image enlarger to enhance the stereo audio image, and Aphex plans to show a new "ultra linear" FM stereo generator.

However, the bloom of the FMX flower has wilted. Several firms that announced plans for FMX generators at the 1986 show—such as Orban, CRL, Aphex and Inovonics—have dropped their plans completely or demoted FMX to a future add-on port in a new or existing non-FMX generator. (See the FMX update in this issue.)

Processors

In line with the new NRSC pre/deemphasis curve, Orban Associates, booth 3444, plans to show its new 9100B Optimod AM audio processing system that has been updated to add the standard 75 μ S pre-emphasis and 10 kHz low-pass filtering.

The firm will also show the new XT2 six-band limiter accessory to the 8100A Optimod-FM, the 787A programmable mic processor and the 464A "Co-operator"—an integrated level control system with transparent control action.

Circuit Research Labs (CRL), booth 2538, plans to show several new products in line with the new NRSC standard including a series of interface boxes that convert any mono limiter to meet the standard, as well as gear to de-emphasize a signal in order to monitor it.

Texar, booth 2571, will unveil its new AMC-2 "Eagle" monaural AM modulation controller that conforms to the NRSC standard. In addition, the firm will show its new Gemini stereo AGC

amplifier as well as the RCF-1 replacement card #5 for the Orban Optimod 8100.

Texar also plans to show the Audio Prism digitally controlled audio processor.

Inovonics, booth 2434, plans to show its new Model 705 FM/FMX stereo generator at the NAB show, as well as the Model 255 "triband PWM" stereo audio processor for FM. The firm will also feature its 200-series audio processors for AM/FM/TV broadcast and production.

Dorough Electronics, booth 2602, plans to feature its discriminate audio processor Model 610 as well as its loudness meter Model 40-A.

Valley International, booth 2747, will feature its new Model 816 Leveller module for the 800 series and the Model 817 Comander module, also for the 800 series.

Effects, delay, phase correction

On the effects and delays front, AKG Acoustics, booth 2454, will show its new ADR-68K digital reverb unit in addition to other digital delays and reverbs. The firm also plans to display other new gear including a communications headset and several new microphones.

Eventide, booth 2830, will feature its new MIDI control interface for the SP-2016 effects processor/reverb, digital audio effects unit. The firm will also show its existing line of products which include the BD980 broadcast delay line.

Lexicon, in booths 133/136 will feature its 2400 stereo audio time compressor/expander, the 480L digital effects system and the PCM70 digital effects processor.

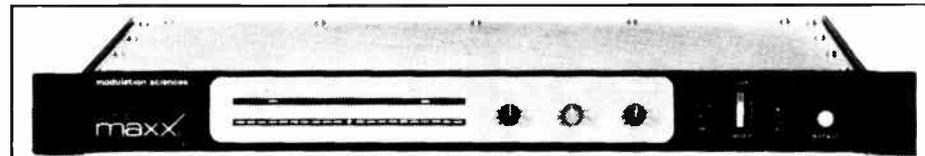
The new Opus random access audio production system will also be shown by Lexicon. It's not a processing unit, but a digital record and edit console which features random access capability, time alignment, mixing, panning, overdubbing and signal processing all in the digital domain.

Regarding new noise reduction gear, Dolby Laboratories plans to feature its

Dolby SR (spectral recording) process gear for single, dual and multi-channel packages. The company will also show a wide range of existing noise reduction, signal processing and audio recording systems.

Gotham Audio, booth 3354, plans to feature its new EMT 258 dynamic noise filter to clean up audio recordings and sound tracks. Gotham will also show the EMT 266/277 transient limiters with a delay line for AM and FM/TV transmitters.

dbx, booth 2740, plans to unveil details about a technology that allows the use of any music signal to analyze frequen-



Modulation Sciences will unveil the new Stereomaxx spatial image enhancer.

cy response. It is incorporated in an instrumentation-quality 31-band professional real-time analysis system which will be marketed within a year. The company will also show its FS-900 two-module frame and the 933 distribution amp module.

Stereo enhancement

On the stereo enhancement front, Modulation Sciences will feature its new StereoMaxx spatial image enlarger in booth 2811. The unit, which is mono-compatible and usable with all existing audio processors, enhances and enlarges the stereo audio image and is suitable for all stereo stations—AM, FM and TV.

The firm will also show its other products including the FM Sidekick and Data Sidekick SCA generating systems and the CP-803 composite processor.

Aphex Systems, booth 2816, will unveil its new Ultra-Linear FM stereo generator, with an FMX port, along with the Aural Exciter psychoacoustic audio enhancer controller.

Straight Wire Audio/Audio & Design Recording, booth 2518, plans to show

several new products including the EZ-wider stereo spatial expander as well as the CDQue II and the Speed Demon speed controller. The booth will also include phono and mic preamps, cart machine replacement cards, audio processors and digital mixers.

Broadcast Electronics, booth 3226, will feature its AM stereo exciter and AM stereo modulation monitor in addition to its range of other equipment including FM transmitters, cart machines, mixing consoles, program automation equipment and the DV-2 digital recorder/reproducer.

Test and measurement

As for test and measurement gear, Sound Technology plans to show its new 3100A Programmable Audio Generator

that outputs sine wave, square wave, IM, toneburst and sin/step. The unit communicates with the new companion 3200A Transmission/Audio Analyzer, which receives FSK commands from the 3100A to begin testing.

The firm will also show its 1710A Distortion Measurement System, and the MSAT Switching System for multi-channel audio testing.

Dataworld will show its new AM groundwave calculations and daytime channel studies in booth 2779.

Audio Precision, booth 2452, will show two new audio testing modules for System One, the firm's IBM PC-based audio test system.

One module measures DC voltage and resistance, while the other generates tone bursts, square waves, pink noise and more.

Potomac Instruments, booth 3329, plans to show the RC-16 automatic remote control system and the QA-100 program audio analyzer.

Sescom, booth 3445, will show a number of new items including the AG-1 audio generator, MLD-6 dual mic-line driver, the TR and IL series (featuring high-Z to high-Z connections) and the PO-44 thru PO-52 (nine units added to the "Portables" line).

Amber Electro Design, booth 2426, will unveil its high speed plotting option on the model 5500, the model 8000 PC instrument controller, the model 5100 audio oscillator and the model 5300 audio analyzer.

QEI Corporation, booth 3336, will show its 691 modulation monitor/test set, along with FM exciters and FM transmitters from 1 W to 60 kW.

Hardigg Industries, booth 2489, will show its new 19" rack-mounted plastic shipping and storage containers.

Finally, Selco/Sifram, booth 2450, plans to feature fuseholders as well as a variety of Collet and push-on knobs.

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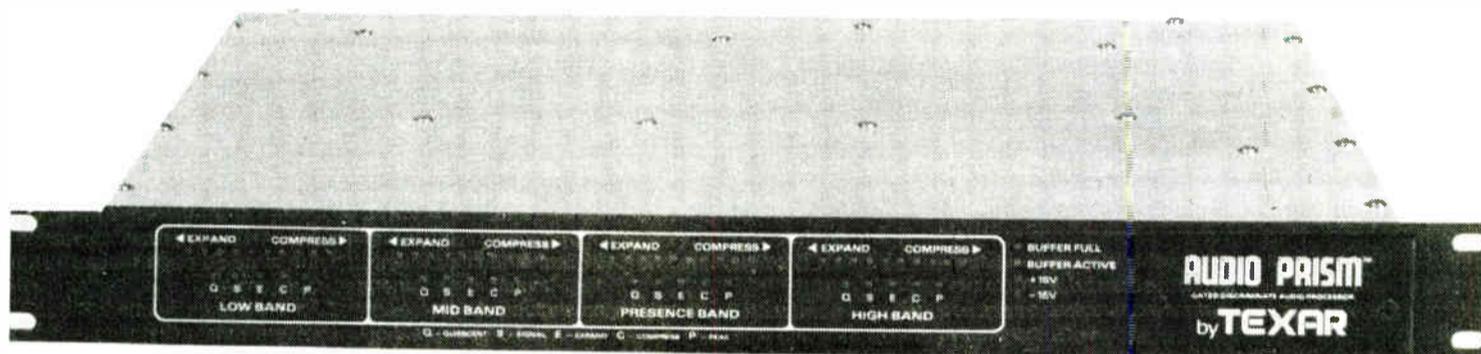
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The National Radio Systems Committee (NRSC) voluntary standard for AM pre-emphasis and frequency response promises to bring high-fidelity to the AM band. Ratified January 10, 1987 after nearly a year in development, the standard establishes technical specifications for future transmission and reception in the AM band.

The NRSC was a joint effort of the National Association of Broadcasters (representing radio stations) and the Electronics Industries Association (representing receiver manufacturers), insuring the standard has support from both required groups.

The standard includes a pre-emphasis specification in conjunction with a brick-wall low-pass filter, to permit full-fidelity frequen-

cy response while preventing second-adjacent channel side-band splatter.

Come by Booth #2571 (downstairs) at the Dallas NAB Convention and hear the TEXAR PHOENIX, NRSC-Compliant monaural AM processor. With a suggested list price of \$2745, you can't buy more AM processing power for less money . . . anywhere! Comparing in features and performance with units costing nearly **twice as much**, the TEXAR PHOENIX features variable-asymmetry, a voice phase-rotator to insure maximum modulation, and a low-frequency tilt corrector that can compensate for some weaknesses in plate-modulated transmitters. The PHOENIX also includes features you **don't** get with the competition, like the clean, powerful

sound of digital-control, and individually-gated bands so record fades don't "swish-up."

Being on a tight budget doesn't mean you can't take advantage of the standard. Financing packages are available with monthly payments less than \$100.

Present TEXAR AM users can upgrade to the NRSC standard by replacing the AMC-1 circuit board with the AMC-2 circuit board. Your AMC-1 is worth its full original price when traded in on the purchase of the AMC-2.

Not going to the Dallas convention? Call Barry Honel today at (412) 85-MICRO to arrange for a 10-day demo of the TEXAR PHOENIX in your station. Free copies of the NRSC standard are available from Barry or at the TEXAR booth in Dallas.

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AM Stereo Battles Still Rage

by Alex Zavistovich

Dallas TX . . . In the continuing battle between AM stereo systems, Kahn Communications and Motorola will each introduce products at this year's NAB convention to enhance their lines, and capture a larger segment of the broadcasting market.

Each of the companies is also planning to respond to the recent decision by the National Telecommunications and Information Administration (NTIA) to pursue research into receiver multisystem technology. In mid-February, the NTIA suggested that AM stereo was in a "stalemate."

The government agency proposed that multisystem chips capable of receiving either system's signal in stereo might be an alternative to selection of a single standard.

Kahn Communications

On 27 March, at the convention, Kahn will give a speech on methods for testing AM overmodulation and splatter. The presentation, Kahn said, will address "issues germane to AM stereo and AM improvement in general."

The Kahn AM stereo system will be demonstrated at the NAB using the Kahn model STR-84 exciter and RF01 monitor, he added.

Also on hand at the exhibit will be several products which Kahn maintained "prove the advantages of sideband technology."

The company's exhibit will feature the POWERSide, a means for increasing coverage of AM stereo in high-noise

areas, Kahn said. Also on hand will be the Kahn Good-n-Loud, a low-distortion device for AM stereo modulation, and the Flatterer, a method for broadbanding AM antennas.

Motorola

Motorola's AM Stereo Broadcasting Manager Chris Payne said his company's display at this year's convention will be much the same as last year's, using the Model 1300 C-QUAM AM Stereo Exciter and the Model 1310 Modulation Monitor.

Closed circuit transmission connection

to a variety of car and home receivers, as well as outside antennas, will enable exhibit attendees to hear the system in action in a number of environments, Payne said. The new Carver TX-11A Ultra-high fidelity AM stereo tuner will also be on hand at the Motorola display.

This year, Motorola will be using the NAB trade show to preview two new AM stereo integrated circuits, Payne commented.

One of the products, the MC13022-P C-QUAM AM Stereo IF/Decoder IC, is designed for battery-operated receivers,

with automatic variable bandwidth control. The other, the MC13024-P C-QUAM Personal Portable AM Stereo Decoder IC, is to be used for "Walkman-type" stereo systems, Payne said.

The products are to be previewed at the NAB, he stressed—Motorola may not have "working silicon" by that time.

Other facets of the Motorola exhibit will be a discussion of AM stereo standardization around the world, Payne said, including the selection of C-QUAM as a national standard in Brazil and Australia.

For additional information, contact Leonard Kahn at Kahn Communications: 516-222-2221, or Chris Payne at Motorola: 202-862-1500.

More CD Hardware Offerings Shown

(continued from page B-7)

sired. The CD Filer can also incorporate a database with information about cuts on discs.

In the past few years there have been a number of digital audio store and playback machines introduced into the market, but these have yet to make inroads into radio stations.

Some were hard-disk based, one was a floppy-disk system, and they appeared in various forms meant to replace cart machines as sources for IDs, spots and jingles.

One of the more successful ones was the Broadcast Electronics Digitalk, making its debut this year as a product at the BE booth, 3226.

The DV-2 is a RAM chip-based system that features six-and-a-half minutes of 6.5 kHz audio. It's random access, and can store up to 99 events.

With the amount of storage and the

frequency response, the DV-2 is being targeted for news actualities and non-musical spots.

Compusonics, which in the past has shown digital audio products based on floppy disk and hard disk technology, has a new product this year based on optical disk technology.

Not long ago the company introduced the DSP-1000 Digital Audio Disk Recorder to the consumer market. This year it will be at the Compusonics booth, 2533, also as a professional product.

The DSP-1000 records and edits on a five-inch optical disk. The company says that by utilizing its patented CSX data reduction system, one optical disk can record 72 minutes of full frequency stereo music.

Making a return showing this year will be the Compusonics DSP-1500 floppy-disk-based record and playback machine. It also uses the CSX format, and

is supposed to record four minutes of full frequency audio onto a five-and-a-quarter inch floppy disk.

Two products which will probably find only limited interest among radio stations, mostly because of their cost, are digital audio editors.

Advanced Music Systems last year introduced the AudioFile, a hard-disk record and editing system. Improvements to the AudioFile now allow for sync recording, remote machine control and digital interfaces.

In the past year, Lexicon also introduced a digital audio editor, the Opus, which will be at their booth 133/136. Opus resembles an audio console, and can record, edit, mix and play digital audio.

Like the AudioFile, Opus will probably find more acceptance in a post-production rather than a radio station environment.

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ELECTRONICS INCORPORATED

Sessions to Feature State-of-Art Topics

by David Hughes

Dallas TX ... The recent NRSC AM pre/deemphasis standard, the latest digital recording techniques, the workability of the controversial FMX FM stereo extension system, new AM synchronous transmission systems, and a campaign for FM improvement including a plan to increase Class A maximum powers, all promise to be hot topics during the five-day technical sessions at the Dallas NAB show.

In addition to some new topics this year, the structure of the 41st Annual Broadcast Engineering Conference will also be different from those held in the past. This year, the engineering sessions begin on a Friday and end on a Tuesday, unlike previous years when the technical sessions ran from Saturday thru Wednesday.

The changes mean that broadcasters who want to attend most of the approximately 25 technical sessions and workshops containing upwards of 100 papers will have to arrive in Dallas either late Thursday, 26 March, or early Friday, 27 March.

In addition to the sessions, the NAB Science and Technology Department will also feature a demonstration area for new technologies. Prototype receivers incorporating the NRSC deemphasis curve fed by a closed circuit transmission system will be on display.

The following is a run-down of the planned radio and general engineering sessions. NAB officials stress that the schedule is subject to last minute changes.

Friday, 27 March

For the first time, this year an "opening session" for the engineering conference will be held. The event, starting at 10:30 AM, will feature a continental breakfast. Three FCC officials—Mass Media Bureau Chief Jim McKinney, Office of Engineering and Technology head Tom Stanley, and Field Operations Bureau Chief Dick Smith—will make remarks.

"AM Improvement" takes center stage in a five-hour session from 11 AM to 4 PM. Topics to be discussed include modulation and overmodulation, synchronous transmitters, broadbanding AM antennas and diplexing antenna systems.

In addition, NRSC Co-chairman John Marino will discuss the group's AM

pre/deemphasis standard and Leonard Kahn, of Kahn Communications, will talk about testing AM overmodulation and splatter. A panel discussion on implementing the NRSC standard will feature representatives from Urban, CRL, Texar, Sony, as well as the NAB and the NRSC.

Saturday, 28 March

The latest developments in "Radio Broadcast Engineering" are on tap from 9 AM to 1:30 PM. Quantized amplitude modulation for AM transmitters, using helicopters to evaluate sources of re-radiation from AM stations and the selection of optimum FM-SCA frequencies are just some of the topics that will be discussed.

Also, Emil Torick, co-developer of the FMX FM stereo coverage extension system, will provide an update on its development in light of the demise of the CBS Technology Center late last year. In addition, John Marino will give an update on the newly formed NAB FM Transmission Subcommittee which is leading a campaign for overall FM improvement.

Sunday, 29 March

A "Radio Station Maintenance" session will be held from 9:30 AM to 11:30 AM. The session will feature a panel discussion with Dallas radio station engineers and consultants that will cover cart and tape machines, transmitters and towers. The NAB's annual engineering luncheon follows at 12:30 PM.

A joint radio/TV session, "Satellite Systems," starting at 2:30 PM, will explore solving site problems via computer, a systematic approach to video up-link design, evaluating Ku-band antennas and improved communications.

A 3 PM session will address "Broadcast Studio Construction and Acoustics." Among the papers to be presented, Andy Butler of WHN/WHQT will discuss prefabricated studios for radio stations.

Engineering workshops are planned to start at 7 PM. They will cover a variety of topics including contract engineering, RF radiation regulation compliance and AM antenna tuning. The workshops will be held at the nearby Hyatt Regency Hotel.

Monday, 30 March

"AM-FM Allocations" is the title of a session that will take place from 9 AM
(continued on page B-17)

1987 NAB Engineering Conference Planning Guide

Friday 27 March

11:00 AM: *AM Technical Improvement*
EXHIBIT HOURS: Closed

Saturday 28 March

9:00 AM: *Radio Broadcast Engineering*
2:30 PM: *Convention Opening*
EXHIBIT HOURS: 9:00 AM to 6:00 PM

Sunday 29 March

9:30 AM: *Radio Station Maintenance*
12:30 PM: *Engineering Luncheon*
3:00 PM: *Studio Construction & Acoustics*
7:00 PM: *Engineering Workshops*
EXHIBIT HOURS: 9:00 AM to 6:00 PM

Monday 30 March

9:00 AM: *AM-FM Allocations*
11:30 AM: *Radio Production*
2:30 PM: *Environmental Concerns of Broadcasters*
4:00 PM: *Broadcast Auxiliary*
6:30 AM: *Ham Radio Operators' Reception*
EXHIBIT HOURS: 9:00 AM to 6:00 PM

Tuesday 31 March

9:00 AM: *Radio New Technology*
10:30 AM: *The Digital Radio Studio*
12:30 PM: *Radio Luncheon*
3:45 PM: *FCC Q & A Forum*
6:30 PM: *Closing Dinner*
EXHIBIT HOURS: 9:00 AM to 6:00 PM

Note: Times are subject to change.
Check schedule distributed by NAB at the convention.

You are invited

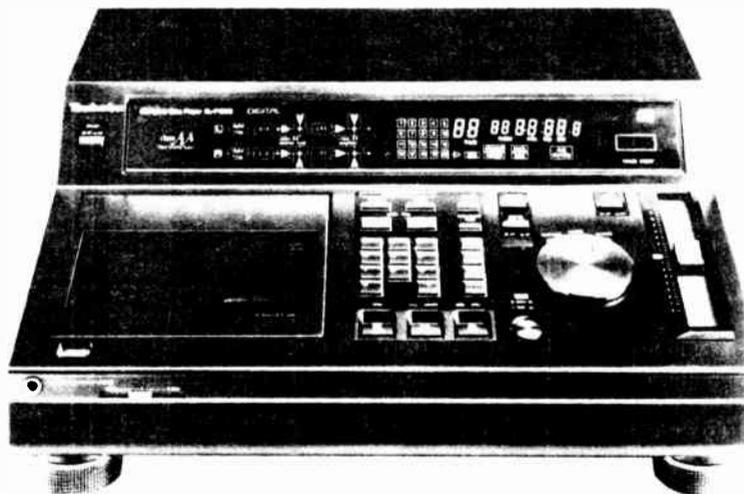
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Circle Reader Service 68 on Page B-31

New Cart Machines, Recorders

by Alex Zavistovich

Dallas TX ... Recording equipment manufacturers will be rolling out a number of new products at the NAB's 1987 convention, ranging from cart machines and open reel recorders to multitrack studio recorders and studio accessories.

By far the largest category of such source equipment is cartridge machines, whose manufacturers will be introducing new lines of single and multi-deck systems for a variety of broadcast applications.

One of the hottest innovations at the convention this year may come from International Tapetronics Corporation/3M, which will introduce a "digital" cart machine. ITC/3M spokesperson Bill Parfitt said the machine is designated the 3M HCDA 3000, but declined to provide additional details.

Informed industry sources, however, say that the unit is based on S-DAT (stationary-head digital audio tape) technology, and may use a non-NAB cart format.

Cart machines

A variety of new cart machine products will be on hand during the trade show.

In addition to its digital machine, ITC/3M, in booth 3052, will unveil the

DCM-1 Dynamic Cartridge Monitor, as well as feature its full line of cartridge machines, including the 99B with ELSA recorders and 99B reproducers.

ITC also plans to show the Delta and Omega recorders and reproducers, the ESL V eraser/splice detector and the ScotchCart II NAB carts.

Broadcast Electronics, in booth 3226, will introduce the Phase Trak 90 single-deck cart machine with built-in non-encoding auto-phase correction. BE will also feature its upgraded C series multi-deck machines—the three-deck 5300 and 5400, and the five-deck 5500.

Also to be shown at the BE exhibit will be the DV-2 solid state digital recorder/reproducer, with 6½ minute recording capability and frequency response of 6.5 kHz.

BE's line of FM broadcast transmitters, from 30 W to 35 kW, and its AM stereo exciter and AM stereo modulation monitor will also be featured.

On hand at the Fidelipac display in booth 3092 will be the new Dynamax CTR30 series three-deck NAB cartridge recorder/reproducer, in stereo or mono, with self contained audio switcher and mixer.

Fidelipac will also feature the Dynamax CTR100 series cart machines, and the CTR10 series cart machines with auto fast forward.

The ESD10 eraser/splice detector, NAB

tape cartridge Dynamax back lubricated ¼" recording tape will also be shown.

Pacific Recorders and Engineering, exhibiting in booth 3151, will show its Tomcat and Micromax cartridge machines. The Micromax recorder is making its NAB debut.

PR&E will also show a new, compact stereo mixer designed for news, on-air, production and remote work, and feature its full line of on-air and production consoles.

Tape decks

Although the bulk of new equipment will be introduced by cartridge machine manufacturers, other recording equipment will also be unveiled. Multi-track units with up to 24-track capability and open reel professional recorders are among the products to be brought out at the trade show.

In booth 3246, Otari Corporation will be exhibiting its full line of professional, open-reel tape recorders/reproducers. On hand will be the MX-5050 Series and the MTR-10/12 Series with center-track time code. Otari will also show its MX-70 1" 16 channel analog recorder and MTR-20 14" reel recorder.

Otari's display will also show the MTR-90 2" 24 channel professional recorder, MX-80 2" analog 24 or 32 track recorder, and the DTR-900 1" 32 channel professional digital "PD" format recorder. The CTM-10 NAB style professional cartridge recorder/reproducer will also be featured.

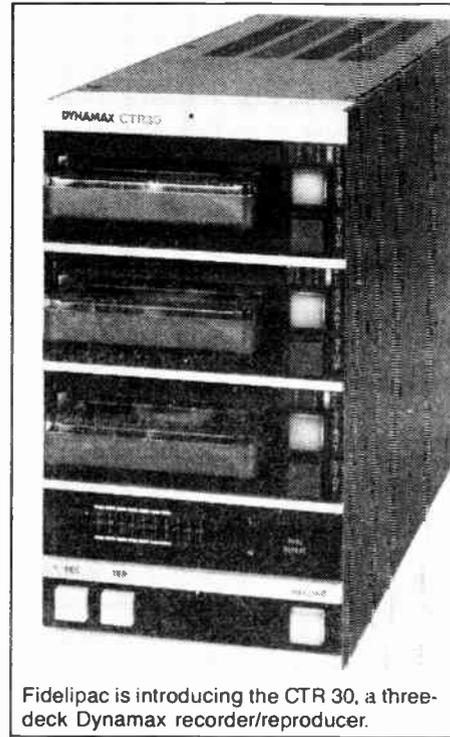
Tascam/TEAC's booth will feature the ATR-80 2" Multitrack and the 122 MK II, the latest version of the 122 broadcast recorder. The company will also present the ES50/501 SMPTE code multi-machine synchronizer and LV-200 laser disc recorder.

Nakamichi USA Corp., in booth 2456, will show the MR-1 three-head rack mountable professional cassette deck, the MR-2 two-head rack-mountable professional cassette deck, and SP-7 stereo monitoring headphones.

In booth 2579, Fostex Corp. of America plans to feature the E-2 and E-22 two-track open reel tape recorders, as well as the E-8 and E-16 eight- and 16-track open reel recorders. The X-15, 160, 260 and 460 four-track cassette recorder/mixers will also be shown.

Tapes, carts, accessories

Taber Manufacturing/AVSC, Inc., in booth 3333, will exhibit the model 409 and model 1500H tape degaussers, as



Fidelipac is introducing the CTR 30, a three-deck Dynamax recorder/reproducer.

well as audio plug-in replacement heads for most professional recorders.

Featured at the Agfa-Gevaert booth, number 2815, will be Magnetite 62 low-noise, high-output audio cassette tape, and the PEM 468 and PEM 469 standard bias studio mastering tape. The company will also exhibit a range of high-output, low-noise tapes in chromium oxide and iron oxide.

In booth 2601, Garner Industries will show its complete line of audio, video and computer tape erasers.

Finally, Stanton Magnetics, in booth 3331, will display its line of turntable cartridges and styli.

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Variety in Consoles and Telco

by Alex Zavistovich

Dallas TX . . . AM and FM broadcasters attending the NAB show in Dallas may have a difficult time taking in all the innovations in on-air and production consoles expected to be unveiled this year.

Telephone line interfaces for radio equipment will also see some innovations this year. Among the developments presented by manufacturers of telco interface products will be single-and dual-line frequency extenders and digital signal processing.

Harris Corporation's Broadcast Division, in booth 3136, plans to exhibit its Gold Medalist Audio Console, a moderately-priced console with 12 channels and 36 inputs, as well as logic controlled switching and remote start/stop capabilities.

Harris will also present the Medalist series of audio consoles, available in 8-, 10- or 12-channel models.

Broadcast Audio Corporation, in booth 2615, will feature a self-contained six-mixer rack mounted audio console, with front panel cue speaker and metered level preselect. The company's new Series V consoles, also on display, include an integral digital timer and control room monitor panel with headphone EQ.

Also new for 1987 from Broadcast Audio is an advanced audio processing system. Monitor amplifiers, broadcast phono preamps and distribution amplifiers will be presented as well.

Pacific Recorders and Engineering, in booth 3151, will display its full line of on-air, production and news consoles, and a new, compact stereo mixer for news, on-air and remote production. The company plans to exhibit a range of studio cabinetry and custom systems.

Equipment available at Autogram Corp.'s booth 2702 will include the AC-6 six-pot audio console with rotary faders and its eight-pot counterpart, the AC-8. The LC-10 10-pot audio console linear faders and RTV-20 20-pot linear fader audio console will also be on display.

In booth 2602, Dorrrough Electronics will feature its broadcast audio console Model 700. The company also plans to show the model 40-A loudness meter and model 610 discriminate audio processor.

Ward-Beck Systems, Ltd., will show its professional audio mixing consoles in booth 3060. Included in the Ward-Beck display are the R1000, R1400 and R2200 Stereo Radio Consoles for AM and FM, featuring stereo mode switching, mix-minus busing, four-track production interface and dual redundant power supplies.

Ward-Beck will also display the D8212 distribution amplifier assembly, with twelve 8-output amplifier modules and dual redundant power supplies.

In booth 2770, Soundcraft USA will exhibit the SAC 200 broadcast console and TS12 multitrack production console. The SAC 2000 on-air broadcast console, TS 24 multitrack production console and the Series 200 consoles will also be shown.

The Wheatstone Corp. exhibit in booth 2400 will feature the SP-6 radio production console, available in four- or eight-track, with four auxiliary busses, equalization and tape recorder controls.

The MTX-1080 Reinforcement console, also at the Wheatstone booth, has programmable muting, 8 effects sends, four-

band sweepable equalization, and eight 11x1 input matrix mixes. The company also plans to show the AP-500 Audio Console and A-500 "On-Air" console.

Howe Audio Productions, Inc., in booth 2832, plans to show the 10,000 series audio console, the Howe expandable and modular 9000 series console with linear faders and the 8000 series console, with rotary faders. The 12-channel 7512A and the 7012/7012A consoles will also be exhibited, as will the Howe Model 2300 Phase Chaser.

Howe's booth will also present the HDP 1000 stereo headphone amp. The amp has two balanced inputs and two 200 ohm headphone outputs, each with independent volume control and each

with a set of switches, for a variety of signal matrices.

Displayed in booth 2807 will be Logitek's Stereorack six-channel rack-mountable stereo console, and the Auditorack rack-mountable console. The company will also exhibit the Crossfire automated audio crossfader, with adjustable fade rate and presettable fade style.

Logitek also plans to show the Perfectionist audio console and its BPA-200 Phono preamps.

Calrec by AMS, exhibiting in booth 2825, will focus its display around the Assignable '86 broadcast console, which can control up to 128 channels and 12 stereo groups. The console includes assignable channel controls, routing and

faders, with floppy disk system status memory back-up.

Also at the Calrec display will be the N-series portable mixer, available in up to 16 channels, with AC or battery power. The company will also show its Soundfield stereo mic with variable polar pattern.

Available for inspection in booth 2508 will be the Audio Technologies Inc. Vanguard series BC12DSL audio console, with 12 mixers, 24 inputs and dual stereo outputs. ATI will also present its Matchmaker and Disc Patcher interface units, as well as the EmphaSizer Audio Processor.

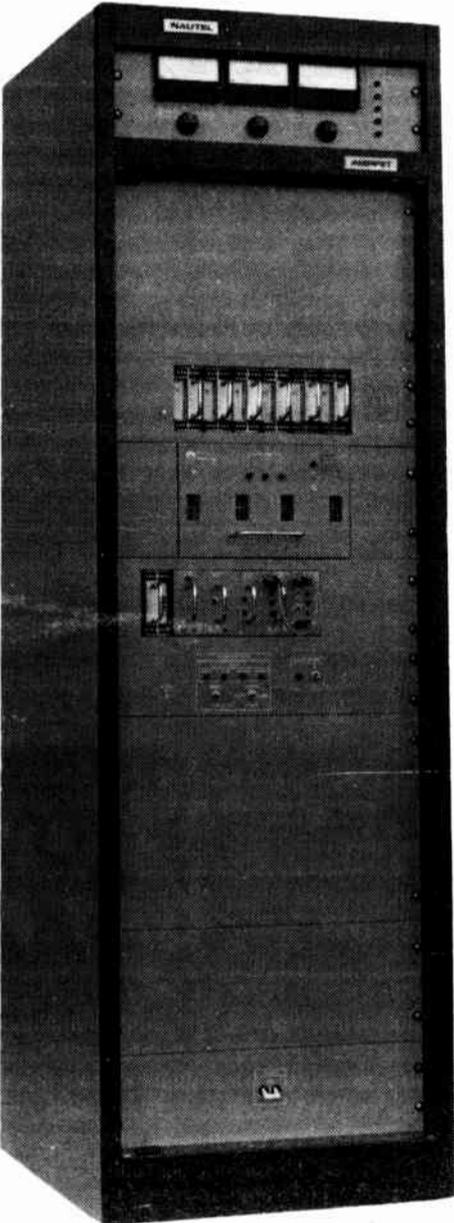
The Seck-62B broadcast version of the Seck-62 recording and PA portable audio mixing console will be featured at Connectronics' booth, number 2403. The Seck-62B has six inputs into both stereo
(continued on page B-17)




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Exhibitor Problems Answered

(continued from page B-1)
of Saturday to Wednesday.

That means that this year the floor will be open from 9 AM to 6 PM on Saturday, Sunday, Monday and Tuesday—four full days.

Last year, the floor was open from 9 AM to 6 PM Sunday, Monday and Tuesday, and 9 AM to 2 PM Wednesday—only 3½ days.

Fisher said that while many exhibitors are "reserving judgment," many seem to be pleased that there will be a half day more floor time.

Additionally, booth set-up will not take place on a Saturday, thereby avoiding overtime wages.

Many exhibitors, he added, complained last year about dwindling traffic on the Wednesday half-day, while some attendees complained about not having enough time to see all the booths they wanted.

"On balance, the four full-day floor schedule should be advantageous for everybody," Fisher said.

Complaints remain

Despite the overall "wait-and-see" response from most exhibitors contacted by RW about their predictions for the Dallas show, more than one firm is planning not to go.

"For the first time in many years were are not exhibiting at the NAB," said Comex President Jack Rickel.

He indicated that his firm objected to the NAB "charg(ing) its associate members \$10-\$15 million to display their wares" while at the same time charging "the individual attendees \$100 per day just to see those wares."

Rickel characterized his action as a "personal protest," and said he did not know if other exhibitors had cancelled for similar reasons.

Thomson questions

Some of the vast majority of exhibitors that do plan to exhibit their wares were concerned about the fate of one of the show's larger exhibitors—and there were hopes for possibly obtaining its booth space.

A spokesperson for the NAB's exhibits office in St. Louis indicated that exhibitors had been calling to find out the status of the large Thomson CSF booth following talk in late January and early February that the firm was closing its US-based video division in Stamford CT.

However, it appears that while Thomson CSF-Broadcast, the name of the US division, will not occupy the booth, other Thomson divisions will.

Nat Ostroff, president of Comark Communications, a Pennsylvania-based manufacturer of TV transmission equipment that was purchased by a Thomson France-based division in 1986, indicated that his firm will share the Thomson NAB booth with other European-based Thomson divisions.

Seniority guidelines

Even before the 1987 show is held, the NAB exhibitors committee was already busy planning for future shows. And a continuing issue of concern involves seniority.

Fisher said the NAB was still working to prepare formal guidelines on exhibitor seniority.

Booth placement and size is deter-

mined by how many years a firm has exhibited at the show.

However, in the past, many exhibitors complained that the NAB had no firm seniority policy.

Some exhibitors have also questioned how mergers and acquisitions affect a company's seniority.

Fisher said the NAB may announce some developments regarding seniority guidelines at the Dallas show, where the next meeting of the exhibitors advisory

committee is scheduled to take place. At press time, time and location had not been announced.

Elections held

In other news, in late January three new exhibitor representatives were elected to the nine-member exhibitors advisory committee.

They are David Burns of Allied Broadcast Equipment, Ed Youskites of Grumman Electronic Systems and John Phelan

of Shure Brothers.

Committee representation is based on exhibitor type and amount of exhibit space occupied. Seats on the committee are for three years on a rotational basis.

In addition to Fisher, who serves as chairman, other committee members include Jack Williams of Pacific Recorders, William Johnson of Varian Associates, Fred Powers of Centro, Robert Gonnelli of TSM and Lynn Distler of Comrex.

For more information about the committee contact Al Fisher at Ampex: 415-367-4161. For more information about the NAB's convention floor policy contact Ed Gayou at 314-721-7717.

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See Us at NAB Booth 3136

Consoles and Telco

(continued from page B-15)
and mono outputs.

Connectronics will also have on hand a range on portable audio mixing consoles and a variety of specialized flexible, color-coded audio wire and cable.

ADM Technology, in booth 3266 will feature the RM1083 rack-mount modular 8x3 audio mixer with eight mic/line inputs. Also on display will be the RM1168 audio mix-minus matrix for multiple SNG feeds. The unit has eight outputs

and is available in 16, 24, 32 or 48 inputs.

Audio-Technica's display in booth 2407 will feature the AT4462 stereo portable production mixer with two pannable mono inputs and two true stereo inputs, each with cue capability. The unit has a Modu-Comm circuit that provides an IFB system over existing mic lines.

ADM plans to exhibit the DA26 stereo 1x6 or monaural 1x12 distribution amp with optional VCA control.

In booth 3338, LPB Inc. will show its Signature III audio consoles and the Alpha and Citation audio consoles. The LPB exhibit will also feature the 60 W TPO PSRA/PSSA transmitter.

At its exhibit in booth 2454, Soundtracs will show its line of mixing consoles, as well as the FMX stereo rack-mount mixer.

Gentner Engineering, in booth 2669, will unveil its "Digital Hybrid"—an auto-nulling telephone system which uses digital signal processing. Also on hand at the Gentner exhibit will be the VRC-1000 remote control unit, and the EFT-900 and EFT-1000 "Frequency Ex-

tenders" with full two-way communication capability.

Gentner's booth will also feature the 10A and 20A passive routing switchers for on-air audio and the Versapatch, an enclosed patch panel with Flexiblock termination.

In booth 2519, Symetrix, Inc. will present the 109 Auto-Nullline Hybrid, a single-line hybrid with 2-4 wire converter for telephone interface. The company will also exhibit the TI-101 single-line telephone interface, the 104 multi-line telephone interface and the 108 broadcast telephone interface.

The 528 voice processor and 501 Peak-RMS compressor-limiter will also be shown at the Symetrix booth.

Equipment distributor Bradley Broadcast will use booth number 2556 to exhibit the Telos 100 digital telephone hybrid.

Comrex Corp., in booth 3460 will show its new hybrid telephone interface, as well as its single and dual-line frequency extenders, telephone couplers and ENG/SNG cue systems.

Here's what broadcasters say about THE HARRIS CONNECTION:

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Joseph A. Carriere, President
Roswell, NM/Lubbock, TX:

"When a studio fire wiped us out, our Harris sales manager was on the scene in six hours and we were back on the air in 10 days!"

"Our VHF equipment from Harris gives us the best quality money can buy. And Harris really stands behind its products."

"Over the years, Harris has treated us very well. Other manufacturers may make good equipment, but not all can give the kind of support we get from Harris!"

KNOB, FM-RADIO
John R. Banoczi, General Manager
Anaheim, CA:

"When it came time to buy a 35 kW transmitter, we found that Harris had the right product with the right features at the right price—so we went with the Harris FM-35K."

"Besides—Harris has an excellent reputation for backing and servicing the products it sells."

KCOB, AM-RADIO
John Carl, General Manager
Newton, IA:

"Our SX-1A, 1 kW AM transmitter performs as advertised. It gives us a stand-out presence on the dial—especially in our fringe areas."

"And Harris' SunWatch has completely solved our PSA/PSSA power scheduling problems. I don't know how a station could do it otherwise."

"When we've needed service, Harris has always come through."

WEAT, AM-RADIO
Bert Brown, Chief Engineer
West Palm Beach, FL:

"Most AM broadcasters who have upgraded their facilities in this part of the state have gone with Harris SX transmitters. As you are well aware, this is a lightning prone area of the country, and our SX-5A has performed well above our expectations in the area of maintenance and downtime."

"We chose Harris for its professional service and support. I have a good rapport with Harris people."

WSTQ, FM-RADIO
Al Moll, General Manager
Streator, IL:

"Before we switched to Harris, we were barely on the air with a poor signal. Our FM-3.5K, 3.5 kW transmitter makes us a stand-out on the dial."

KHBS, UHF-TV
Don Vest, Director of Engineering
Sigma Broadcasting, Fort Smith, AR:

"KHBS is our first Harris installation, and I'm very glad I did it."

"What impresses me most about Harris is the service and parts support. In 19 years of broadcasting, it's the most cooperative and helpful in the industry."

"Harris knows how to treat its customers. Harris is going to win!"

WOMA, FM-RADIO
Dale Eggert, General Manager
Algoma, WI:

"Our FM-3.5K, 3.5 kW transmitter has operated flawlessly since our sign-on last November."

"And our Harris representative not only helped us put our equipment package together, but stayed on duty after the sale to see that we met our critical air date!"

WKNO, VHF-TV
Pat Lane, Chief Engineer
Memphis, TN:

"Before I ordered our two new transmitters, I tested three service departments. Harris was the only one with an engineer on duty at 10:30 p.m. the Fourth of July. With the others I got a recording and an answering service."

"What impresses me most about Harris is the attitude and the people."

For your free four-color 18" x 24" Harris Connection poster with service and parts phone numbers, please complete this coupon and return it to Harris Corporation, Broadcast Division, P.O. Box 9601, Mission Hill, California 91346-9601.

NAME _____ TITLE _____

STATION _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____



Sessions

(continued from page B-13)

to 11 AM. The FCC's Bill Hassinger will discuss the status of international broadcast agreements, NAB Engineer Ralph Justus will examine FM/aeronautical interference problems and John Furr, of Clear Channel Communications, will discuss his proposal to increase power and antenna height for Class A FM stations.

Between 11 AM and 12:30 PM, a session will be held on "Radio Production." Topics to be discussed include phase problems in stereo audio broadcast facilities, satellite remotes and multi-track production.

At 2:30 PM, another joint radio/TV engineering session will be held. The "Environmental Concerns of Broadcasters" will cover a variety of topics including lightning, tower icing, RF radiation and PCB hazards in older transmitters.

"Broadcast Auxiliary" problems will be highlighted in a 4 PM session. Papers will focus on how to use the 23 GHz band, and how to use the increasingly crowded spectrum more efficiently. A panel discussion will follow.

Tuesday, 31 March

"Radio New Technology" will be the topic from 9 AM to 11 AM. Automatic phase correction for tape cartridge machines, the new generation of audio routing switchers and the latest technologies for radio news gathering and production will be discussed.

"The Digital Radio Studio" will be highlighted in a session from 11 AM to 12:30 PM. Sony's R. Katsume and Peter Dare will discuss the R-DAT digital recording system. Also on tap/an error correcting system for digital audio recorders, a new concept audio console and cost effective implementation of digital systems in broadcast facilities.

Following the radio luncheon, the annual FCC Engineers Forum will be held at 4 PM. Commission officials will field questions from the audience. Issues to be addressed include station inspections, operator requirements and technical rule changes.

The convention's closing ceremonies will be held Tuesday evening.

For more information about the NAB's engineering sessions, contact the Science and Technology Office at 202-429-5346.

New Analyzer for RF Networks

by James W. Pollock
and Clarence M. Beverage

Doylestown PA ... The PhaseMate from Vector Technology Inc. (booth 2477) is a piece of test equipment designed specifically for the setup and analysis of RF networks utilized in AM transmitters and antenna systems. The unit provides the user with functions previously unavailable in a single test instrument.

PhaseMate is a portable, battery operated test instrument with two toroid probes which will measure RF current and phase through a network. From 500 kHz through 2,500 kHz, PhaseMate will measure phase shift with an accuracy of $\pm 1^\circ$ and RF current from 0.025 to 25 with an accuracy of $\pm 2\%$ of full scale reading. Three, $3\frac{1}{2}$ " D'Arsonval meters are used, two for current and one for phase. Accurate phase readings are obtained under all typical modulation conditions.

The policy of our firm, *Communications Technologies Consulting Engineers*, is not to participate in product reviews. We have taken an exception in this case due to the unique capabilities PhaseMate offers and the input and suggestions Vector has allowed us to provide. More importantly, Vector's overall attitude about the instrument is outstanding.

Prototype at NAB

A prototype will be shown at the NAB convention in Dallas for the purpose of obtaining further input and suggestions from interested parties. It is our understanding that the unit will not be placed in production until suggestions from the convention are fully evaluated.

We have utilized a prototype PhaseMate to set up a three tower, 10 kW vector phasor prior to field trimming. The instrument along with a RF synthesizer and 50 ohm termination, allowed each network in the phasor to be set for the proper impedance transformation and phase shift in under two hours.

The time savings when compared to

bridging each circuit leg individually were a side benefit. The real value of the instrument is the ability to set each network to the exact phase shift and transformation ratio.

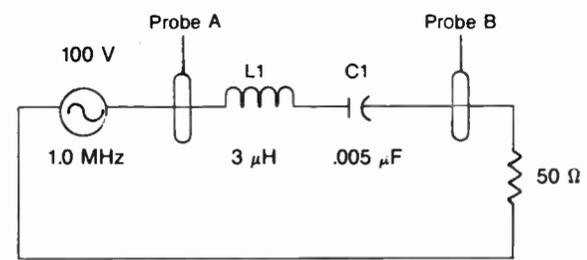
Until now a \$30,000 network analyzer or a \$9,000 vector impedance meter would be required to give the same results. These instruments are not portable and do not function well in an on site environment where undesired signals may be present.

Broadbanding demands

The PhaseMate will be coming to market as interest in array broadbanding increases. Successful broadbanding demands that each network be set to the specified phase shift and transformation ratio.

PhaseMate allows quick and easy setup of a network to the correct values. En-

Figure 1.



With toroid probes positioned as shown, what is the measured phase shift?

gineers who are regularly involved in array broadbanding or setup should find Phase Mate to be a valuable field tool.

As a final note, some interesting conditions can arise in the utilization of the instrument in the field. An example is the setup of a series, LC phase shift network.

Readers interested in circuit theory will appreciate the problem shown in Figure 1. A box will be setup in Vector's booth 2477 to receive written answers to the problem.

At the end of the convention entries with the correct answer will receive a prize from Vector.

NRSC Group Plans Meeting at Show

(continued from page B-5)
adjacent channel interference.

The 10 kHz stopband has been the cause of some controversy, since under FCC rules stations can theoretically broadcast to 15 kHz.

Later in the AM improvement session, Harrison Klein, an engineer with San Francisco-based consultant Hammett and Edison, will present a paper on "splatter" interference, which Marino said is "in line with" the NRSC's work.

The paper, "Modulation, Overmodulation, and Occupied Bandwidth," was originally presented in the fall of 1986 on behalf of the NAB's AM Improvement Committee.

In it, Klein indicated that splatter interference is primarily caused by "excessive high-frequency content in the audio signal that modulates the transmitter."

The excess high-frequency modulation, Klein said, is due to both greater

amounts of high frequencies in programming material and preemphasis of the transmitted signal by broadcasters.

Low-pass filtering before modulation and clippers in the processors or transmitter inputs were suggested by Klein as ways to minimize splatter. He pointed out that "meeting FCC bandwidth limits is no guarantee of a clean transmitted signal."

On the exhibit floor, several receivers incorporating the NRSC deemphasis will be shown in prototype form.

GE, Delco and Sony have already agreed to bring prototypes, and Rau said

that a number of others are anticipated.

Other displays of the NRSC standard will include a closed-circuit setup of several receivers, reproducing an off-the-air environment, Rau said.

Exhibit attendees will have the opportunity to examine the audio responses of the various receivers and the effect the NRSC standard has on the broadcast signal.

For additional information, contact Mike Rau at 202-429-5346, John Marino at 203-333-4800, or Harrison Klein at 415-342-5200.

New Xmtrs, T & M Gear

(continued from page B-2)
sections at the show.

Electronic Research, booth 2576, will feature sidemount FM antennas, FM panel antennas and duplexers.

RF measurement, guy wires, accessories

In other related gear, Holaday Industries, booth 2737, will unveil its new instrument for measuring non-ionizing radiation for video display terminals, as well as its complete RF radiation exposure measurement system.

New single socket/double socket directional Thurline wattmeters will be unveiled by Bird Electronic Corporation in booth 3472.

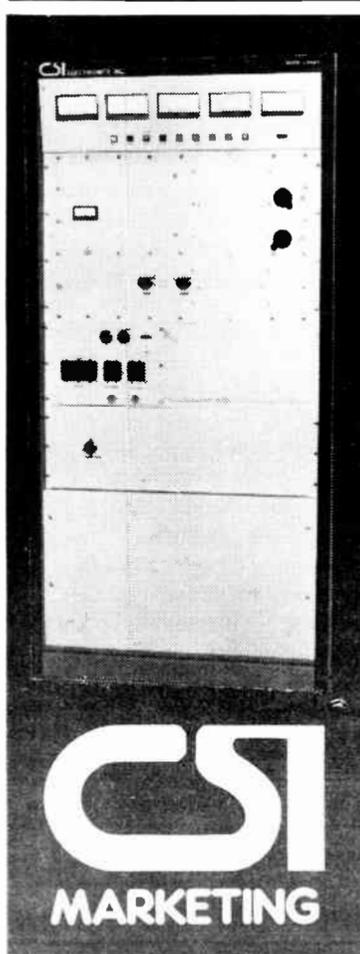
Andrew Corporation, booth 3098,

plans to feature its line of antennas, high-power transmission lines, Heliac coaxial cables and waveguides as well as earth stations.

United Ropeworks, booth 2420, will feature its line of Phillystran HPTG electrically transparent maintenance-free tower guys and specially designed systems for high power applications.

Flash Technology, booth 3454, plans to highlight its new medium intensity lighting for towers up to 500', as well as a controller for high intensity beacons and a controller for red lighting systems.

Lightning Eliminators and Consultants, booth 151, plans to feature dissipation array systems, Chem-Rods and lightning warning systems.



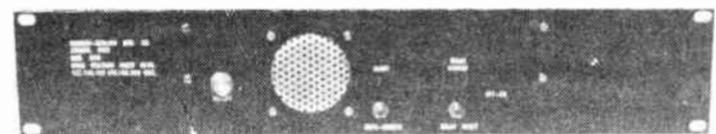
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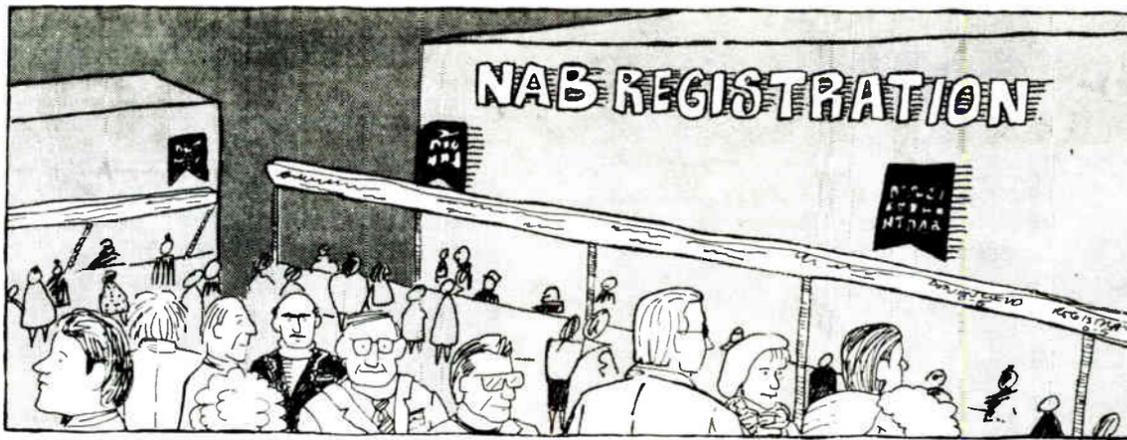
WEATHER RADIO Model CRW



Price \$475.00

Sensitivity .28 microvolts for 12 dB quieting. All 3 frequencies. Alert tone demutes receiver, closes relay and gates audio to 600 ohm rear terminals. Another set of rear terminals has continuous 600 ohm audio output. Double conversion crystal controlled. crystal filter in first I.F., ceramic filter in second I.F. Dual gate MOS FET front end. 50 ohm coaxial input. Adjacent channel (j25 kHz) down 70 dB. 19" rack mount. 3'2" H. ail metal enclosure. In stock—available for immediate delivery

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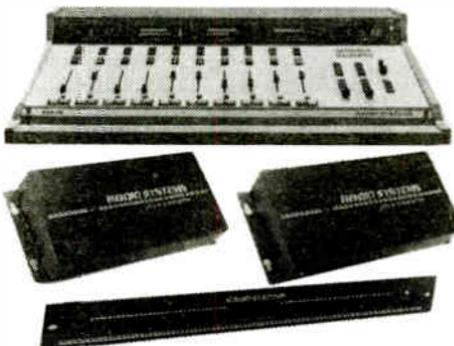


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On the ESA-10 Console with:

- 10 channels
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- dual stereo outputs
- 3 stereo meters
- clock and timer
- remote control

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Over \$1,000.00

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- ESA-10 broadcast console \$9,950.00
- PA-1 stereo pre-amp 295.00
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- DA-16 distribution amp 425.00

Total ~~\$10,965.00~~

\$9,950.00



Save \$50.00!

On the industry's best stereo DA:

- the Radio Systems DA-16
- 2 inputs to 8 outputs
- independent level controls
- .01% distortion/+18 dbm out
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On our efficient mono DA:

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- 1 input to 8 outputs
- independent level controls
- .01% distortion/+18 dbm out
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Save \$20.00!

On our improved TM-2R studio timer—with remote!

- 6 segments— $\frac{3}{4}$ " high
- Max time 23:59:59
- 6 remote resets
- crystal time base

~~\$195.00~~

\$175.00



Save \$45.00!

On the PA-1 Broadcast's most popular pre-amp!

- dual or stereo operation
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- low noise/excellent channel separation

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Call Today.

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Or mail your order/information card today!

NAB Exhibitors Directory

Legend

The 1987 NAB Exhibitors Directory is a listing of information provided by exhibitors who responded to a NAB Radio questionnaire survey. Past and potential NAB exhibitors were asked about new and established radio products scheduled to be shown at the NAB this year.

The questionnaires were mailed to vendors in January 1987. Those returned by Deadline are included in this Directory.

Company **A** Booth

Accu-Weather Inc. 2529

Intro: Front Door 600™, PC-based hardware & software to receive & archive satellite delivered weather graphics; Siswriter 2000-D, high resolution, plain-paper printer for DIFAX weather maps.

Acoustic Systems 2786

On Display: Prefabricated bdct booths, air & news studios, recording booths.

ADC Telecommunications Inc. 2819

Intro: I.C.O.N. (Integrated Cable Organization Network), a new family of audio & visual cable termination & distribution devices.

Adelphon Inc. 234

Intro: Rapid Antenna, actual working unit, a unique patented, rapid, deployable, emergency or remote location self-erecting structure.

Contact: Henry McGinnis
PO Box 7256
Fort Worth TX 76111
817-335-8666.

ADM Technology Inc. 3266

Intro: RM1083, rack mount modular 8x3 audio mixer; RM1168 audio mix-minus matrix; DA26 stereo 1x6 or monaural 1x12 dist amp w/optional VCA control.

Also: BCS3643-PC; S/TV24; Post-pro 12; VP1603; RM1010.

Advanced Micro-Dynamics 2672

Contact: Peter Burke
PO Box 150
Harvard MA 01451
617-456-3570.

Advanced Music Systems NA

Intro: Computer controlled assignable mixer w/total instant re-set. Up to 128 channels & 12 stereo subgroups all within easy reach of one operator.

AEG/Bayly Inc. 2700

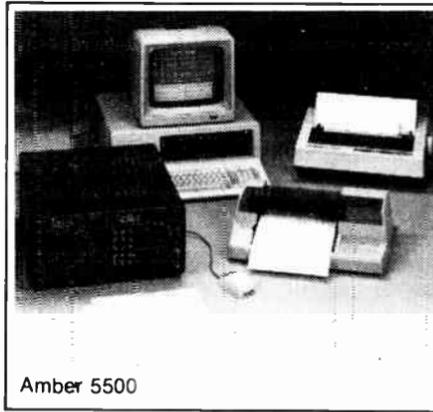
Agfa-Gevaert Inc. 2815

On Display: Broadcast Plus 3/4" U-matics; Studio Performance 1/2" VHS video cassette; 1/2" 192 HGX Hi-Fi video pancake tape; Magnetite 62™; PE 627/827; PE 619/819/1219; PE 649; PEM 469; PEM 468.

Aircraft Music 2514

Intro: Many new albums such as Road Challenger; Synth Drops; The Guitar Album; On A Serious Note; On a Serious Note; The Instructor; Ad-Vice, now entire library on compact disk.

Also: The Aircraft Music Library.
Contact: Mark Cuddy
77 North Washington St
Boston MA 02114
800-343-2514/617-367-0510.



Amber 5500

Alpha Electronics 2788

On Display: Power tubes, transmitting, vidicons triodes tetrodes camera tubes by EIMAC, Amperex, Phillips, GE, Sylvania, RCA, etc.

Altronic Research Inc. 146

Intro: 5800 Series, self contained water cooled heat exchangers; 6700 Series air cooled dummy loads.

Also: Omegaline water cooled RF coaxial load resistors.

Amber Electro Design Inc. 2426

Intro: High speed plotting option on the model 5500; Model 8000 PC instrument controller; application software to control the model 5500; model 5100 audio oscillator; model 5300 audio analyzer.

Also: Model 5500 programmable distortion & noise measurement system; Model 3501 distortion & noise measuring set.

American Studio Equipment 2440

Amherst Electronic Inst. 2622

AMX Corp. 2908

Intro: SX16+ relay controller, software control panels with LED status display.

Andiamo Inc. 2609

Andrew Corp. 3098

On Display: Transmission equipment to serve the broadcast industry & our extensive line of antennas & systems.

AKG Acoustics Inc. 2454

Intro: ADR-68K digital reverb; Q-15 communication headset; D-112 dynamic microphone; C-522 stereo ENG field microphone; C-422 stereo X-Y & MS microphone.

Also: AKG microphones, headphones, digital de'ays & reverbs, mic stands, communication headsets, phonocartridges.

Allied Broadcast Equipment 3414

Intro: Media Touch Touchscreen user friendly broadcast control system.

Also: AMCDs 1000A CD multiplay w/ 100-disc capacity featuring random access to any disc, any cut; Telnox radio/telephone equipment; Titus technical labs Last Word.

Contact: Gere Schultz
3712 Natl Road West
Richmond IN 47374
317-962-8596.

Allied Tower 3432

On Display Prefabricated steel tower structures for Broadcast, Microwave & Two-Way Radio.

Alpha Audio 102

On Display: The Boss 8400 automated audio editor; the Sonex, Sonex 1, Soundtex & acoustilead acousticsl treatment products.



AKG ADR-68k Digital Reverb

\$35,000

It's time to think again about Automation.

If you had previously dismissed program automation as too expensive, now is the time to reconsider. If you considered automating the overnight, but didn't think that it was economically feasible.

IGM has the system for you. If you are using Satellite Music Network, Transtar, or any of the satellite

services and have not automated because of the expense, IGM provides a cost-effective system today.

With systems starting at less than \$20,000, IGM thinks it's time for you to re-consider automation. The IGM-EC is an economical automation controller for use in your station. We developed a computer program to turn your IBM-PC or compatible computer into a program automation system, using the IGM-EC as the audio/machine controller.

The IGM-EC is already equipped with 12 audio channels. These can be used for satellite and studio inputs. You may also use the IGM GoCart or Instacart for random-accessed commercials or announcements. To meet your other requirements, we can add Studer-Revox PR-99 Reel-to-Reel machines and Fidelipac cart machines.

IGM has over 20 years of program automation experience and will help you design a system to meet your operational and financial requirements. For more information on the IGM-EC, use the attached coupon or call 800-628-2828, Ext. 578

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OK, I thought about it. Send me information on automating with the IGM-EC.

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Station _____ Phone _____

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City _____ State _____ Zip _____

or Call 800-628-2828, Ext. 578

IGM COMMUNICATIONS
282 W. Kellogg Road, Bellingham, WA 98226, 206-733-4567

ECHO From Telos Systems



The ECHO was designed specifically for telephone applications such as concert, weather, movie or sports listener-lines. Hardware-based digital audio storage provides up to four minutes of message time, with an internal gell cell to protect memory. The system provides a control layout similar to a cassette machine, and functions can be remoted for fully produced, and professional sounding messages. A four digit counter displays the number of calls received in the auto-answer mode. An internal monitor amplifier and speaker allow auditioning without the need for an external telephone. Hookup is simple with a standard modular connector for teleo, 1/4" TRS jack for a line-level source, and a front panel XLR mic input.

\$1295.00

Call 800-732-7665 for Details!

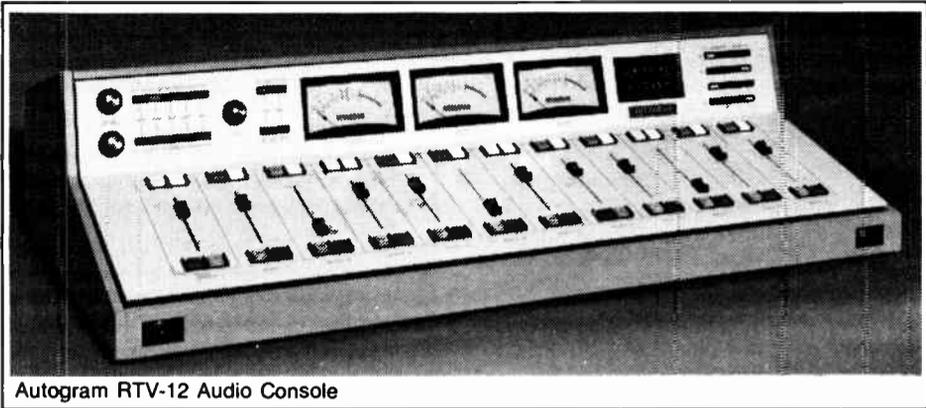


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Visit us at NAB booth 2556!

NAB Exhibitors Directory



Autogram RTV-12 Audio Console

Aphex Systems Ltd. 2816

Intro: Ultra-Linear FM stereo generator, high performance in a compact, moderate cost package.

Also: Aural Exciter psychoacoustic audio enhancer; Compellor intelligent compressor/leveler/peak limiter; studio Dominator, multi-band peak processor.

Applied Research Tech. NA

Arrakis Systems 2742

Associated Production Music 2650

AT & T 3212

Audico Inc. 2720

Intro: M-II, Betacam & 8mm cassette tape loaders, reloaders, & rewinders.

Also: Video tape loaders, reloaders, rewriter, cyclers & length verifiers for U-matic, VHS, Beta & 8mm cassettes; VHS, beta & U-matic labels on pressure-sensitive sheets; Broadcast cart tape winders; Nagra tape winders, professional impuler; audio cassette tape loaders, rewriter, timer, exerciser & labels sheets.

Audio Accessories 2754

On Display: Pre-wired patch panels; telephone jacks; patch cords, all in long-frame, Skini & miniature sizes.

Contact: Timothy Symonds
Mill Street
Marlow NH 03456
603-446-3335.

The Audio Broadcast Group 2581

On Display: Human-engineered On-Air & Multi-Track production systems w/studio furniture of advanced design incorporating consoles, recorders, tape cartridge systems, compact disc players & other support equipment.

Audio Precision Inc. 2452

Intro: Two new audio testing modules for System One.

Also: System One, IBM-PC based audio test system.

Audio-Technica U.S. 2407

Intro: The AT4462 is a stereo portable field production mixer w/two pannelable mono inputs & two tru stereo inputs, all transformer coupled at mike or line level, a unique Modu-Comm circuit provides an IFB system over existing mike lines with no crosstalk problems.

Also: Full line of microphones, studionphones, & accessories.

Audio Technologies Inc. 2508

Intro: Vanguard Series BC12DSC, audio console, 12 mixers, 24 inputs, dual stereo out.

Also: Matchmaker & disc patcher interface units, MicroAmp Series & Encore Series, audio mike, line, phono monitor & dist amps, EmphaSizer audio processor, Vanguard Series 8 mixer consoles.

Contact: Sam Wenzel
328 W Maple Ave
Horsham PA 19044
215-443-0330.

Auditronics Inc. 3310

Contact: Stovall Kendricks
PO Box 18838
Memphis TN 38181
901-362-1350.

Autogram Corp. 2702

Intro: RTV-12, 12 P&G slide pots.
Also: AC-6, AC-8, IC-10, LC-10, RTV-20, Autoclock.

Avcom of VA Inc. 2425

B & B Systems Inc. 2665

Intro: AM-3B, CRT based real-time stereo audio phase monitor.

Basys 2913

Intro: The new Basys System I, designed for smaller newsrooms & contains all the functions that have made Basys the world leader in newsroom computing.

Barrett Associates 2768

Intro: Jasoni Tenpsenz temperature sensing devise for remote transmitter housing; Jasoni Tapesenze testing unit for all broadcast tape machines, R-R, cart & cassette machines; Satellink device for fading from satellite to any or all of 6 local audio sources & returning to satellite.

Also: Reconditioned & guaranteed full line of broadcast equipment.

Contact: Barrett Mayer
3205 Production Ave.
Oceanside CA 92054
619-433-5600.

BCS 2785

On Display: Used production & postproduction video equipment: cameras, VTRs, SEG, TBC, etc, large showroom full.

Belar Electronics Lab 3347

Belden Electronic Wire & Cable 2651

Bencher Inc. 2568

Intro: Bencher adjustable copystand for heavier video cameras.

Also: M3 copystand, M2 copystand, Copymate.

Benchmark Media Systems 2470

Intro: RGC-10 & MTX-10, remote control for the System 1000; MIA-4x4 world's finest mic pre-amp system; SPM-2 & SPM-3 stereo meter systems, VU & RPM.

Also: System 1000, audio processing & dist amps for stereo TV "Diff's" differential interface amps convert unbalanced inputs to balanced.

Bend-A-Lite 2907

Beyer Dynamic Inc. 2823

Intro: DT770 & DT990 studio monitoring headphones; MC740 DJ mic; MPC-40 low profile mic; M700 cardioid dynamic mic; MCE-10 miniature condenser & MCE-80 condenser mics; ML736 & MC737-PV short & long shotgun mics.

Also: DT108 & DT109 Series headworn mics; M130, M160 & M260 ribbon mics; wireless shotgun & handheld mics; complete range of dynamic, condenser & ribbon mics, headsets & accessories for professional broadcast studio & field projection.

Contact: Mike Solomon
5-05 Burns Ave
Hicksville NY 11801
516-935-8000.

BGW Systems Inc. NA

Bird Electronic Corp. 3472

Intro: 4641/42 4-1/16" flanged & 4843/44 4-1/8" unflanged, single socket/double socket directional THRULINE[®] wattmeters; 8575 5kW forced-air cooled, dry load resistors, dc-450MHz; 8345-115 6kW Hi-power attenuators 30dB ±0.5dB, dc-500MHz.

Bonneville Satellite NA

Boonton Electronics Corp. 124

Bowen Broadcast Service 2522

Intro: TCR-100; EOT-SOM kits; claw up-down led switch kits.

Also: TCR-100 refurbish maintenance program; parts available that are no longer furnished by RCA; call about any TCR part or problem you have.

Contact: Wm. D. Bowen
8343 Lynn Haven Ave
El Paso TX 79907
915-598-5556.

Bradley Broadcast Sales 2556

Intro: Telos 100 digital telephone hybrid.

Also: Telos 10, Echo, Studer A-807.

Contact: Art Reed
8101 Cessna Ave
Gaithersburg MD 20879
301-948-0650.

Brintec Corp 2478

Broadcast Audio Corp. 2615

Intro: A self-contained 6 mixer rack mounted audio console with front panel cue speaker & metered level preselect; 3-frequency headphone EQ option for Series II & IV consoles; new Series V consoles feature integral digital timer & control room monitor panel with headphone EQ; also an advanced audio processing system.

Also: Audio consoles for radio & TV stations with 6-20 mixing positions, EQ & pan pots are optional on most models, solid walnut or oak trim is standard; other products include 6 mixer console extenders, monitor amplifiers, broadcast phono preamps, & distribution amps.

Broadcast Automation Inc 2697

Intro: A new IGM-EC automation system, including new Otari AFS-1000 tape decks, single play cart decks, & re-manufactured SMC 250 Carousels; also shown will be the BAI EC Monitor, a cue speaker & amplifier panel for the EC, EC Carousel interfaces for 250 Carousels, & replacement circuit boards for the Carousel.

Also: Otari tape decks, several new updates for the Carousels, information about other automation systems such as the Schafer 900 series & the Cetec 7000.

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When it comes to the FM audio chain, no single product is right for everyone. Take your pick from Inovonics' lineup of best-value, best-quality system components. Use ours together, or ours with "theirs." We leave it up to you.

705 FM/FMX™ STEREO GENERATOR
Digital subcarrier and pilot generation. Pre-emphasis, lowpass filters, overshoot correction and overmod protection — all built in. CBS/NAB's FMX™ system available as a low cost plug-in option.

250 PROGRAMMABLE STEREO PROCESSOR
Gated AGC / 5-band Compressor / FM Limiter. Presettable processing programs can be "called up" for format changes. Optional RS-232 bus for computer remote control.

255 TRIBAND/PWM STEREO PROCESSOR
Fully gated AGC and 3-band Compressor / FM Limiter. Widest range of user control over subjective parameters for conservative to very aggressive results. Many unique features.

260 BASIC STEREO AUDIO PROCESSOR
Gated AGC / Compressor / FM Limiter; ideal for educational FM, TV audio, STL's, tape transfer, many other uses. Unbeatable value!

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Inovonics Inc.
1305 Fair Avenue, Santa Cruz, CA 95060
(408) 458-0552 TLX: 325670 (INOVONICS UD)

Broadcast Electronics 3226
On Display: FM bdct xmtrs; audio tape cartridge machines; AM stereo exciter & AM stereo modulation monitor; audio mixing consoles; program automation equipment; DV-2 solid state digital recorder/reproducer.
Contact: Curtis Kring
4100 N 24th St
Quincy IL 62305
217-224-9600.

Broadcast Mgmt Plus 2646

Broadcast Supply West 2743

Intro: Radix Electronic Products, including a new phone preamp, 16 channel dist amp, studio timer & telephone mixer; in addition the Sony APR5002 2 trk R-R recorder; exhibited for the first time will be ProBase III for Technics turntables, which offers superior turntable isolation for a modest price.

Also: A complete operating control room from the console to the transmitter, also a control room with the latest state of the art bdct effects units and also computerized equipment packages & instant order entry from the show floor.

Contact: Tim Schwieger
7012 27th St West
Tacoma WA 98466
800-426-8434.

NAB Exhibitors Directory

Bryston Ltd. 2406
Intro: Bryston 6B 500 watt monaural amplifiers; Bryston 2-way stereo & 3-way monaural crossover.
Also: Bryston 70 Series amplifiers, 270, 370, 470; Bryston broadcast preamplifiers.

C

Cablewave Systems 3489
Intro: Rigid coaxial transmission lines.
Also: Antenna & transmission line products.

Cam-Lok Inc. 213

Cambridge Products 2731

Canare Cable Inc. 2523
Intro: MR202AT 2-conductor multichannel mic cable; VAC-FB video patch cables; V4S multi channel coax cable.
Also: L-426S Star Quad mic cable; L-483 Star Quad multichannel mic cable; LV-61S 75 ohm video coax; LV-77S 75 ohm video coax; A2V2P camera remote cable; cable reels; junction boxes; snakes; pigtailed; cable-reel snakes.

Capitol Magnetic Products 3345
On Display: Audiopak bdct cartridges, A-2 & AA-4.

Cascom 2647

CBSI 2517

CCI 2484

Central Tower 2799

Century 21 Programming 3452
Intro: Seven music formats on compact digital disc; Auto-Seque ad-on to convert ordinary CD players to hands-free bdct sequencing; SuperScheduler software for CD music rotation; Station Master software for traffic & billing.
Also: Nineteen automation formats on R-R tape; Compact disc production library.

Cetec Vega 3394
Intro: Model R-33 pro plus miniature portable wireless microphone receiver for ENG, on-location, or studio needs; Model T-86 omnidirectional handheld wireless microphone; The "Q" Plus wireless intercom system.
Also: Top-of-the-line R-42 pro plus true dual diversity wireless microphone receiver; Pro 1-B bodypack & Pro 1-H handheld systems; 66B portable receiver; a full line of handheld transmitters.

Chester cable 2734

Circuit Research Labs 2538
Contact: Ray Updike
2522 W Geneva Drive
Tempe AZ 85282
602-438-0888.

Clear-Com 3352
Intro: Single & multiple channel wireless full-duplex intercom with interface to CCI.
Also: Single & multiple channel teleproduction intercom including conference line & point to point, IFB & zone page systems.

CompuSonics Inc. 2533
On Display: DSP 1000 digital audio disk recorder; DSP 1500 digital disk broadcast recorder/player.

Comrex Corp. 3460
Intro: Telephone hybrid interface.
Also: Frequency extenders, telephone couplers, ENG/SNG cue systems, TV aural monitors.
Contact: Lynn Distler
60 Union Ave
Sudbury MA 01776
617-443-8811.

Concept Productions 3334
Intro: Radio formats now on digital audio tape; computer controlled programming systems.
Also: Radio formats: A/C, CHR, AOR, country & contemporary M.O.R.

Connectronics Corp. 2403
Intro: Seck-62 B, bdct version of the Seck-62 recording & P.A. portable audio mixing console; Studiflex-24, new 24-pair multipair cable for studio installation & harness wiring; the UX high power audio connector for loudspeakers.
Also: Full range of Seck portable audio mixing consoles; Connectronics range of specialized audio wire & cable.



Continental Electronics 3200
On Display: Full product line of AM & FM bdct xmtrs, power levels from 1 to 70 kW, FM antennas, audio equipment & other related RF products.
Contact: Steve Claterbaugh
PO Box 270879
Dallas TX 75227
214-381-7161.

Control Concepts Corp. 2687
Intro: New expanded Islatron® product line, power line protection systems for facility and/or system protection.
Also: Featuring Islatron® product line for all bdct applications; Islatron® Active Tracking® filters.

Countryman Associates NA

Crown Int'l 2927
Intro: New broadcast line of Crown GLM microphones.
Also: D-75 microphones; Micro Tech Series PS-200, PS-400, PSA-2, DC-300A-2, D-150A-2, Techron TEF-12.

CSI Marketing 3418
Intro: CSI T-40-F2 40 kW FM xmtr; CSX-20F exciter utilizing 2nd order phase lock loop.
Also: FM xmtrs.
Contact: Dale Leschak
PO Box 6135
Lakeland FL 33807
813-647-1904.

Current Technology 2723

Custom Business Systems 2517
Intro: New co-op/copywriter software for radio stations.
Also: The System, the business software system.

D

Peter Dahl Co. 222

Data Center Mgmt Inc. 2760
On Display: Comprehensive election reporting/newsroom computer systems.

Dataworld 2779
Intro: AM groundwave calculations; daytime channel studies; industry mailing lists.
Also: AM, FM, TV & LPTV directories; allocation & interference studies; population counting based on 1980 census data; flag service of FCC releases; terrain elevation retrieval program; FM & TV area-to-late studies on map overlay; FCC/FAA tower locations with overlay; unused call-sign listings.
Contact: Shirley Ostmann
4827 Rugby Ave, Ste 200
Bethesda MD 20814
301-562-8822.

Davis & Sanford Co. 2496

dbx 2740

Delta Electronics 3488

Dewolfe Music Library Inc. 2712

Dialight Corp. 2691



Are you serious about CD programming?

If you understand the full potential of the Compact Disc in broadcasting, then Philips has the player you need. The LHH 2000 provides features and capabilities you'll never find in a consumer player, including:

- Balanced outputs
- Precise cueing
- Access time under 2 seconds with accuracy of 13.3 milliseconds.
- Search wheel with 3 time/turn ratios
- Indication of real music time remaining
- Fader start
- Status indication for each player (edit, ready, on line, on-air)
- Solid, professional-grade construction

Perhaps most important, the LHH 2000 is easy to use. Basic on-air operation can be learned in a matter of minutes.

Large LED displays are programmed to lead the operator through the sequence, step by step. Also, the control buttons are widely spread and clearly labelled to prevent errors, miscues, and dead air.

Finally, with the LHH 2000 you can be assured of knowledgeable service support because, in the USA, Philips professional CD systems are sold and serviced by authorized Studer Revox Professional Products dealers.

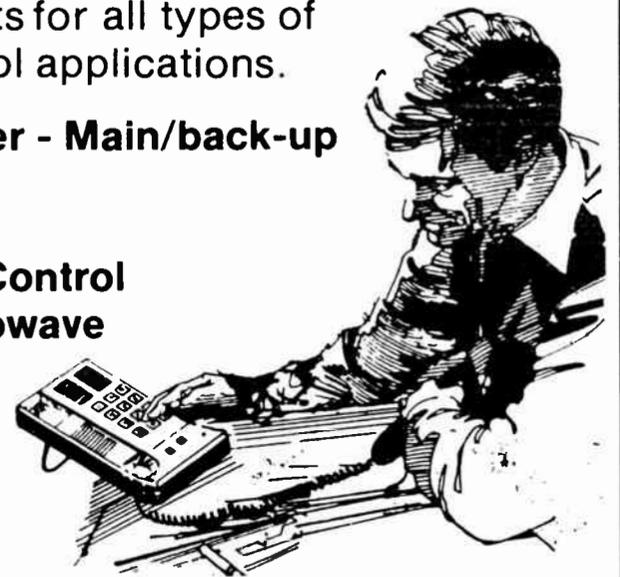
If you're serious about the CD, please call or write: Studer Revox America, 1425 Elm Hill Pike, Nashville, TN 37210; (615) 254-5651.

STUDER REVOX

Remote Control FREEDOM...

Gentner's VRC-1000™ Remote Control Unit uses inexpensive, readily available dial-up circuits for all types of remote control applications.

- Transmitter - Main/back-up
- ENG
- Satellite
- Machine Control
- STL/Microwave



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TWX: 510-600-1445
(GENTNER RF PRDT)

NAB BOOTH #2669

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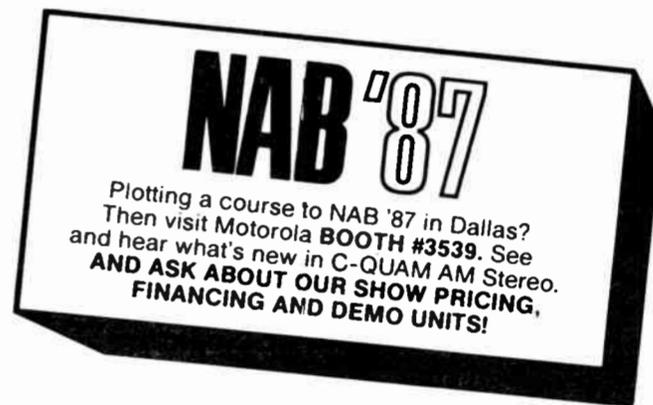
Why in the world broadcast in AM Mono?

***Go C-QUAM® AM Stereo, the
system with growing worldwide support!***

Face it. We live in a stereo world. And you join a family of winners when you choose C-QUAM AM Stereo. You'll find . . .

- *Over 500 C-QUAM AM stations around the globe*
- *Nearly 10 Million C-QUAM decoder IC's shipped to receiver manufacturers*
- *3 countries to date with a C-QUAM AM Stereo standard*
- *4 manufacturers committed to providing C-QUAM decoder IC's*
- *Expert installation and complete technical support.*

For details on the Motorola C-QUAM AM Stereo system, call Steve Kravitz collect at 312/576-0554.



MOTOROLA

SOUND QUALITY YOUR LISTENERS EXPECT

C-QUAM® IS A REGISTERED TRADEMARK OF MOTOROLA, INC.

NAB Exhibitors Directory

Dielectric Communications 3436

Intro: Double truncated waveguide for UHF TV.
Also: FM ring & panel antennas; waveguide & accessories; coaxial transmission line & accessories; RF loads; FM filters & combiners; TV filters & diplexers; coaxial & waveguide switchers; opto switchers & combiners.

Dolby Labs 2705

Intro: Dolby SR spectral recording process available in single, dual & multi-channel packages; Model 390 & 392 two channel Dolby C-type NR unit for 3/4" VCR applications.

Dorrrough Electronics 2602

Intro: Broadcast Audio console model 700.
Also: Discriminate audio processor model 610, AM, AM stereo, FM, TV & TV stereo versions; Dorrough loudness meter model 40-A.

Drake-Chenault 2510
DX Communications 2693

to 500' tall; controller for high intensity beacons; controller for red lighting systems.
Also: High intensity lighting for tall towers.

Focal Press 2541

Intro: New books just published: Live TV, an inside look at directing & producing by Tony Verna; Technique of TV News, 2nd edition by Ivor Yorke.

Also: Books for broadcasting professionals including: the Radio Station by Michael Keith & Joseph Krause; Electronic Media Mgmt by William McCavitt & Peter Pringle.

Contact: Kevin Kopp
80 Montvale Ave
Stoneham MA 02180
617-438-8464.



Electronic Systems Lab SBM Console

Fostex Corp. 2579

Intro: 460 4 trk cassette recorder/mixer, the first cassette recorder that can be synchronized to audio/video editing systems.

Future Productions 2790

On Display: The FP 200 duplicator a full function duplication system for medium to large systems; the new FP 80 duplicator is an ideal duplicating system for a small system which has the same features in a more compact unit; the AVD-10 & AVD-24 are ideal audio (stereo) & video distribution amplifiers for a duplication system, broadcast quality & feature balanced audio input, a differential video amp & loop through for video & audio.

Contact: Ken Washino
630 Ninth Ave #403
New York NY 10036
212-333-3606.

E

Econco Bdct Srvs Inc. 2578

On Display: Rebuilt transmitting tubes for radio & TV transmitters.

Electro Impulse Labs 3431

Intro: New improved DPTC-25kFM; DPTC-50kFM; model DPTC-75kFM which replaces DPTC-65kFM.

Also: Dry, forced air cooled FM dummy loads; RF calorimeters; wattmeters; attenuators.

Contact: Mark Rubin
116 Chestnut St.
Box 870
Red Bank NJ 07701
201-741-0404.

Electronic Research 2576

On Display: Side mount FM antennas; FM panel antennas; Diplexers & notch filters.

Electronic Systems Lab 2640
Emcor Products NA

On Display: Modular electronic enclosure systems, computer support furniture, emission control EMI/RFI enclosures, packaged blowers seating & a quick ship Instant Emcor stocking program.

Energy-Onix NA

On Display: Our complete line of FM xmtr products.

Environmental Tech Inc. 2696
ESE 3470
Eventide Inc. 2830

Intro: Midi control interface for SP2016 effects processor/reverb digital audio effects unit.

Also: The BD980 bdct delay line offers talk show programmers superior audio quality, fast delay catch-up, 10 second full stereo delay, versatile new delay "entry" "exit" modes & time compression capability with no variable speed tape recorder required; for maximum versatility in audio production & post production, the SP2016 effects processor/reverb; the H969 & H949 Harmonizer® pitch-change/effects units.

F

Ferno-Washington Inc. 2914
Fidelipac 3092

Intro: New Dynamax CTR30 Series three dek NAB cartridge recorder/reproducer, available in stereo & mono, which is supplied with record electronics built-in as a standard feature, in addition a unique motor arrangement eliminates the need for bearing adjustments, common in other 3-deck machines, all machines record & detect 3 cue tones, audio switcher & mixer are self-contained.

Also: Dynamax CTR100 Series cart machines with Cartscan™; CTR10 Series; ESD10 eraser/splice detector; NAB tape cartridge; Dynamax back-lubricated 1/4" recording tape; On Air & Recording studio warning lights; cartridge racks; test tapes; hand held bulk tape degaussers & accessories.

Contact: Art Constantine
PO Box 808
Moorestown NJ 08057
609-235-3900.

Fife-Pearce Electronic 2686
Flash Technology 3454

Intro: Medium intensity lighting for towers up



TV **NEW 8185A TV Stereo Generator**

The *first* second-generation Stereo Generator, with the features and specs you always wanted. From the company with more first-generation units in service than all other manufacturers combined. Works with your current processing or (preferably) with the Orban 8182A OPTIMOD-TV Audio Processor.

AM **NEW 9100B OPTIMOD-AM Audio Processing System**

The industry-standard 9100A, updated to add the newly-announced NRSC-standard modified 75us pre-emphasis and 10kHz low-pass filtering. (Upgrade kits available for current owners of Model 9100A.)

FM **NEW XT2 Six-Band Limiter**

Out just a few months, the XT2 is already the new "hot box" for that "major-market" audience-grabbing FM sound. Listen for yourself.

PRO **NEW 787A Programmable Mic Processor**

Multi-function microphone processing system, ideal for optimizing on-air DJ mics and studio production chores. 32 programmable presets!

AUDIO **NEW 464A Co-Operator™**

An integrated easy-to-use level control system with outstandingly transparent control action. Includes slow AGC leveling, compression, gating, HF limiting, and peak clipping. Just the ticket for production work, or for protecting SCAs and STLs.

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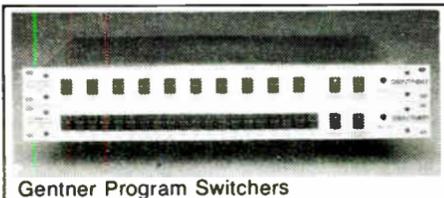
See Us At NAB Booth 3444

NAB Exhibitors Directory

G

Garner Industries 2601
On Display: Video, audio & computer tape erasers.

Generic Computer Systems 2818
On Display: IBMisLOG, automated traffic & billing on the IBM XT; & APPLELOG, the same on the Apple IIe.



Gentner Program Switchers

Gentner Engineering 2669
Intro: Digital Hybrid, an auto-nulling telephone system that uses digital signal processing techniques.
Also: VRC-1000 remote control unit; EFT-900 & EFT-1000 frequency extenders with full 2-way communication capability; SPH-3A, SPH-4 telephone systems; TC-100 automatic telephone coupler; Teleprocessor audio processor; 10A & 20A program switchers; IC-20 Intercom system; Microtel portable telephone system; Versapatch chassis-enclosed patch panel.
Contact: Elaine Jones
540 West 3560 South
Salt Lake City UT 84115
801-268-1117.

Gorman Redlich Mfg Co. 2715
On Display: EBS encoder-decoders; NOAA weather receivers & digital antenna monitors.
Contact: James Gorman
6 Curtis St.
Athens OH 45701
614-593-3150.

Gotham Audio Corp. 3354
Intro: RSM 190 Neumann stereo condenser shotgun microphone for sports & ENG applications & the EMT 258 dynamic noise filter for cleaning up audio recordings & sound tracks.
Also: EMT 266/277 transient limiters with delay line for AM & FM/TV xmtrs; EMT 938/948 bdct turntables; A807 Studer 1/4" tape recorder

for studio production; A725 Studer CD player for professional bdctrs & K&H self-powered reference monitor speakers O 98, O96 & O 92.

H

Hallikainen & Friends

Hallikainen & Friends 2925
Intro: New features for the DRC190 include a 32 channel status transceiver, low cost half duplex control/telemetry UHF transceiver, IEEE488 port for remote control of automatic test equipment; the production version of the ITO177 will be shown.
Also: DRC190 automatic remote transmitter control/logging system; TEL171 digital telemetry adapter for Moseley TRC 15A remote control; the TVA142/132 audio mixing system.
Contact: Harold Hallikainen
141 Suburban Rd, Bldg E4
San Luis Obispo CA 93401
805-541-0200.

Hardigg Industries 2489
Intro: 19" rack-mounted shipping & storage container, plastic.
Also: Reusable plastic shipping & storage containers & package cushioning devices.

Harris Corp Bdct Group 3136
Contact: Martha Rapp
PO Box 4290
Quincy IL 62305
217-222-8200.

Harrison Systems 3412
Contact: Brad Harrison
437 Atlas Drive
Nashville TN 37211
615-834-1184.

Heie Engineering NA
Hoffend & Sons 2641
Intro: Motorized lighting hoists, compact pint hoists for individual lighting fixtures.

Also: Stage & studio equipment including manual rigging, motorized rigging, turntables, curtains, cycloramas & computerized control systems.

Holiday Industries 2737
Intro: New instrument for measurement of non-ionizing radiation from video display terminals.

Also: Complete RF radiation exposure measurement system; model HI-5000-sx.

Howe Technologies Corp. 2832
Intro: Phase Analyzer, a lab test instrument for detecting the relative phase between two input sources; external Howe HDP 1000 stereo headphone amp.

Also: Howe custom made 10,000 Series audio console; Howe expandable & modular 9000 Series console & the 8000 Series console; the 12 channel 7512A & 7012/7012A consoles; the model 2300 phase chaser & the 2100 model; the 2300 & the 2100.

H. Wilson Co. 2757
Intro: New super sized & adjustable knocked down TV carts; new super sized welded TV tables.

Also: Support furniture for video, audio visual & microcomputer equipment, i.e. stands, tables, carts, desks, cabinetry.

IGM COMMUNICATIONS

IGM Communications Inc. 3378
Intro: The IGM-EC 4 IGM-SC interfaced to a variety of traffic systems.
Also: Our complete line of program automation products including but not limited to: the IGM-EC, the IGM-SC, the GoCart24, and the Instacart.
Contact: Thomas Ranson
282 W Kellogg Rd
Bellingham WA 98226
206-733-4567.



NAB Exhibitors Directory

ILC Technology 212
 On Display: Daymax® HMI type lamps for motion picture, video, & television.
ITC/3M 3052
 Intro: The DCM-1 Dynamic Cartridge Monitor designed to monitor cartridge performance & to indicate when performance may be deteriorating prior to an on-air failure.
 Also: Our full line of cartridge machines.

Inovonics Inc. 2434
 Intro: Model 255 a Triband PWM stereo audio processor for FM; Model 705 a FM/FMX stereo generator.
 Also: 200 Series audio processors for AM/FM/TV bdct & production; 300 Series magnetic record/reproduce electronics for studio recorders, Video Tape Recorder's and mag-film machines; TVU on-screen video display keyer for stereo audio levels.
 Contact: Jim Wood
 1405 Fair Ave
 Santa Cruz CA 95060
 408-458-0552.

JBL Professional 2727
 On Display: JBL studio monitors utilizing titanium dome diaphragms; JBL Bi-Radial™ studio monitors; power amps utilizing fully complementary circuitry; 1/3 octave EQ's utilizing discrete hybrid circuitry; automatic mic mixer.
 Contact: Rita Veix
 8500 Balboa Blvd.
 Northridge CA 91329
 818-893-8411.

Johnson Electronics 3451
 Intro: STS II Field Strength Meter.
 Also: FM SCA tuners and receivers, audio amps for background & foreground music, paging & public address systems; FM SCA data systems; FM receive antennas & antenna field alignment & test equipment; TV Pro & SAP tuners & receivers.
 Contact: Doug Pakos
 4301 Metric Dr.
 Winter Park FL 32793
 305-677-4030.

K
Kahn Communications 2922
Kay Industries Inc. 2511
Keltec Florida 2435
Keylite PSI Group 2789
Kings Electronics Inc. 3464

KINTRONIC LABS INC.

Kintronic Labs 2540
 Contact: Gwen King
 Rt 1 Pleasant Grove Rd
 Bluff City TN 37618
 615-764-3141.

Kline Iron & Steel Co. 2797
 On Display: Information on our designs & fabrications of guyed towers, self supporting towers, platform towers, multi array towers, space frame structures & special type antenna structures for the bdctg industry & the military.

L
LAKE
Lake Systems Corp. 112
 Contact: Walter Kelley
 55 Chapel St
 Newton MA 02160
 617-244-6881.

Larcam Comm. Equip. 3314
 On Display: A 25 kW FM xmtr with only one tube, self-contained in a cabinet 4' wide by 3' deep.
Lea Dynatech 3332
 On Display: Our line of serves hybrid designed surge eliminators & Kleenline filters.
LDL Comm. 2417
 Intro: Low channel top mounted circularly polarized TV antenna.
 Also: Bdct antennas for TV & FM; Bdct tower products for up to 2000' in height.
Leaming Industries NA
Lease America Corp. 2764

Leasing Concepts 2822
 On Display: Leasing programs especially for bdct film & video & audio acoustics.
 Contact: Barbara Rose
 3 Radnor Corp Ctr.
 Radnor PA 19087
 215-964-8844.

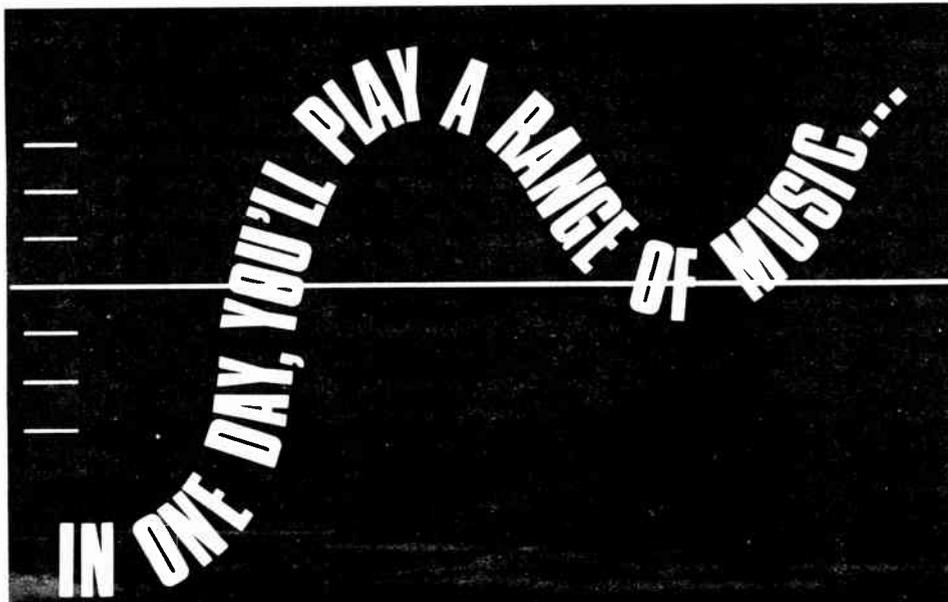
Lectrosnics Inc. 2445
 Intro: The new VHF high band wireless microphone system.
 Also: Portable wireless PA systems.
Lexicon Inc. 133/136
 Intro: Lexicon Opus Random Access audio production system.
 Also: Lexicon 2400 stereo audio time compressor/expander; Lexicon 480L digital effects system; PCM70 digital effects processor.

Lightning Eliminators 151
 On Display: Dissipation Array Systems; Chem-Rods; Lightning Warning System; Consulting & Engineering design services for lightning prevention, grounding for minimum ground resistance, power line conditioning, signal, data, telephone line conditioning.
 Contact: E. Alvin Rich
 13007 Lakeland Rd.
 Santa Fe Springs CA 90670
 213-946-6886.

Logitek 2807
 Intro: Crossfire automated audio crossfader, automatically fades between 2 stereo sources, adjustable fade rate, presettable fade style; Stereorack 6 channel rack mountable stereo console.
 Also: Perfectionist audio consoles; BPA-200 phono preamps; audiorack rack-mountable console; audio accessory system DAs; audio switchers & monitors, audio amps, LED audio level displays, speakers, timers.
LPB Inc. 3338
 Intro: Signature III audio consoles; 60 watt TPO PSRA/PSSA xmtr.
 Also: Alpha & Citation audio consoles; PSRA/PSSA xmtrs.



JBL Studio Monitors



NO MATTER WHAT THE FORMAT

Even though your format may remain constant throughout your operating hours, you have to admit that many songs with different tonal qualities and varied musical characteristics will be played.

A popular approach to on-air signal processing suggests that you can accomplish "listener preference" by dividing the music you play into a number of frequency bands and then arbitrarily "hype" (overemphasize) or de-emphasize certain portions of the program content.

At Valley, we don't feel that arbitrary processing decisions deliver desired end results. Our on-air processors react to the unique qualities existing in music just as the human ear hears them. Since complex waveforms are perceived as being louder, we use **Linear Integration Detection** to allow them to exit our devices at slightly higher absolute levels than more simple waveforms. **Peak Reversion Correction** circuitry is employed in our products to counteract unnatural, listener-fatiguing artifacts such as "pumping" and "breathing." Our patented VCA ensures a clean, open high end, with freedom from distortion and noise.

Hear the difference a Valley signal processor makes! Call 1-800-367-2879 to obtain a 30 day demo of any of our on-air processors at your facility.



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 Nashville, TN 37204 • (615) 383-4737
 Telex 316220 • FAX 31620304 • TW 316 220

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Designed For Exceptional RFI Immunity

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- Output: +20 dBm single ended .600 OHMS
 +25 dBm balanced .600 OHMS
- Designed for stereo or dual mono operation

NAB Exhibitors Directory

M

Magnum Towers Inc. 2901

On Display: Radio, TV, microwave towers.
The Management 2612
 Intro: EZ Log, a complete software traffic & billing system that any station can afford.

Also: Superlog.
Manhattan Prod Music 2550
Marcom 2433

Intro: Model 711, TV stereo generator.
 Also: Model 710 MTS TV stereo generator; Model 730 Off Air TV stereo metered receiver; Model 701-00M stereo modification kit for converting your TVT 701 or 702 to monitor BTSC stereo; Model 520 FM & TV stereo audio processor; C.N. Rood 114 & 110 5 kHz 2 line freq extender, portable & fixed; SC-203 & 204 FM stereo digital stereo generator.

Marti Electronics Inc. 3496
 Intro: RPT-30 remote pickup bdct xmtr, ATS-15 automatic xmtr switcher for STL, TSL.

Also: Narrow band & standard bandwidth aural stereo STL systems, remote pickup bdct systems, including mobile repeater, fixed automatic repeater, 30 watt TSL data link.

Media Computing Inc. 2803
 On Display: Wire Editor software for IBM-PC & compatibles that manages wire service & features a built-in, split screen word processor; Assignment/Archives newsroom data base software for organizing assignment desk & for archiving carts, scripts, etc; Playlist music library data base software & playlist generator.

Media Genrl Bdct Svcs 3335
Microdyne Corp. 3520

Intro: CIM data distribution modem; 1100 TIM, 1100 TDC, Ku-band SCPC transmit/receive equipment.

Microprobe Electronics 2620
Microsonics Inc. 2543

Modulation Sciences Inc. 2811

Intro: StereoMaxx™ spatial image enlarger, dramatically enhances & enlarges the stereo audio image; ModMinder™ TV audio modulation status panel works with wideband TV demodulators.

Also: Our entire multichannel TV sound line including the TSG stereo generator; SRD stereo reference decoder & TV Sidekick SAP & Pro-Channel generators; the FM Sidekick & Data Sidekick SCA generating systems, CLD composite distribution system & CP 803 composite processor.

Contact: Dick Schumeyer
 115 Myrtle Ave.
 Brooklyn NY 11201
 718-625-7333.

Morton Hi-Tek Furnishing 210

Moseley Associates 3202

Intro: MDU dial access remote control; PCL-600 studio transmitter link.
 Also: MRC-2 remote control system; MRC-1600 remote control system; PCL-606 studio transmitter link.

Contact: Bill Fink
 111 Castilian Drive
 Goleta CA 93117
 805-968-9621.

Motorola AM Stereo 3539

On Display: AM stereo excitors & monitors; AM stereo consumer receivers.

Contact: Steve Kravitz
 1216 Remington
 Schaumburg IL 60195
 312-576-0554.

Motorola C-Quam AM Stereo 3539

On Display: Motorola C-Quam AM stereo excitors, modulation monitors.

The Musicworks Inc. 2443

On Display: Radio syndication formats.

McCurdy Radio Industries 3028

N

Nakamichi USA Corp. 2456

On Display: MR-1 3 head professional cassette rack, balanced XLR, rack mountable; MR-2 2 head professional cassette deck, rack mountable; SP-7 stereo monitoring headphones.

Nautel 2658

Intro: Ampfet 1 with 5 power levels for daytimers.

Also: Ampfet Series, totally solid state, modular, AM bdct xmtrs, all powers to 50,000 watts.

Contact: Jorgen Jensen
 201 Target Ind. Circle
 Bangor ME 04401
 207-947-8200.



Modulation Sciences Sidekick Series

PETER DAHL CO. HAS Transformers

We specialize in FAST service for radio and TV stations that are "Off-The-Air" and in need of a transformer.

All transformers and chokes are guaranteed for 12 months! Many other Commercial Broadcast Transformers are also available. Call us for a free quotation.

CCA

FM-2500R Plate Transformer \$ 700.00
 FM-3000DS Plate Transformer 800.00
 FM-4000E Plate Transformer 850.00

Collins

20T L V Plate Transformer \$ 200.00
 20V Bias Transformer, P/N 672-0392-00 150.00
 20V-1-2-3 Plate Transformer, P/N 672-0385-00 550.00
 20V L V Power Transformer, P/N 662-0046-00 125.00
 20V-2 L V Power Transformer, P/N 672-0383-00 200.00
 21E/M Bias Transformer, P/N 662-0001-00 175.00
 21E Driver Plate Transformer, T-108 275.00
 21E L V Power Transformer, P/N 672-0383-00 225.00
 21 E Plate Transformer, P/N 662-0492-00 1500.00

Gates

BC-250G Plate Transformer, P/N 472-0234-000 \$ 350.00
 BC-1E/F Audio Driver Transformer, T-12 or T-4 175.00
 BC-1E/F LV Plate Transformer 175.00
 BC-1E/F Plate Transformer, T-11 550.00
 BC-1H Plate Transformer, P/N 472-0704-000 550.00
 BC-1J/T LV Power Transformer, P/N 472-0454-000
 T-7 or T-2 175.00
 BC-1J Plate Transformer, P/N AP-10459E 550.00
 BC-1 G/T Plate Transformer, P/N 472-0250-00, T-1 550.00
 BC-1 Series Modulation Transformer 695.00
 BC-1 Series Modulation Reactor, 40 HY at 600 MA DC 400.00
 BC-5H/P Plate Transformer, P/N 472-0577-000 1200.00
 BC-5 Series Modulation Transformer,
 P/N 478-0284-000 1350.00
 BC-5 Series Modulation Reactor, 35 HY at 1.4 amp DC 650.00
 BC-10H Modulation Transformer, P/N 478-0403-000 1750.00
 BC-10-H Modulation Reactor, 20 HY at 2.7 amp DC and
 265 VAC at 0.3 ADC 850.00
 BC-10H Plate Transformer, P/N 472-0582-000 1750.00
 FM-250 Plate Transformer 275.00
 FM 1-B/C Plate Transformer, P/N E-11642 or
 P/N P-4353 575.00
 FM-3G Plate Transformer, T-4 895.00
 FM-20H3 Plate Transformer, P/N 472-0525-000 2250.00

Raytheon

RA-1000 LV Power Transformer \$ 275.00
 RA-1000 Plate Transformer 550.00

RCA

BTA-250M L V Plate Transformer, P/N 93663, T-4 \$ 100.00



BTA-250M Plate Transformer, P/N 93664, T-105 225.00
 BTA-1 Plate Transformer 550.00
 BTA-5H Main Plate Transformer, 6T1 Main,
 P/N MI-28069 750.00
 BTA-5H Teaser Plate Transformer, 6T1 Teaser,
 P/N MI-28069 750.00
 BTA-5H/10H Modulation Transformer, 1T4,
 P/N M949349 1750.00
 BTA-5R Modulation Transformer, P/N B8415099 1250.00
 BTA-5R Modulation Reactor, P/N M949350 650.00
 BTA-5T Modulation Reactor, P/N 225954 750.00
 BTA-10H Main Plate Transformer, 6T1 Main,
 P/N MI-28063-A 1500.00
 BTA-10H Teaser Plate Transformer, 6T1 Teaser,
 P/N MI-28063-A 1500.00
 TT-25 Plate Transformer, P/N MI-19072A 3600.00

Universal Replacement Transformer, Chokes & Modulation Reactors Manufactured By Peter W. Dahl Co., Inc. for General Purpose Applications

DC Filter Chokes

3.0 HY at 2.5 amps DC \$ 300.00
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 10.0 HY at 1.0 amps DC 200.00
 10.0 HY at 2.5 amps DC 350.00
 15.0 HY at 1.0 amps DC 250.00

Modulation Reactors

16 HY at 3.2 amp DC, for 10 KW Low
 Impedance Applications \$1250.00
 20 HY at 2.5 amp DC, for 10 KW High
 Impedance Applications 850.00
 10 HY at 5.6 amp DC, for 25 KW Applications 1350.00

Modulation Transformers

Universal 1 KW Modulation Transformer for Collins 20V Series, RCA BTA-1 Series, Bauer 707, or any other 1 KW AM transmitter using PP 4-400A's in the modulator and parallel 4-400A's in the RF PA \$ 695.00

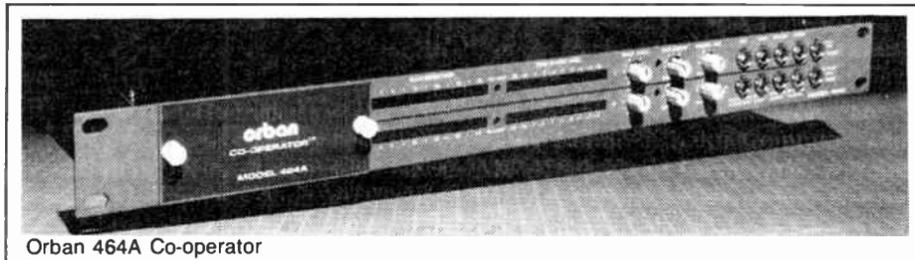
Wilkinson

FM-2500 Plate Transformer \$ 550.00

Prices and Specifications Subject to Change Without Notice.

PETER W. DAHL CO., INC. 5869 WAYCROSS, EL PASO, TEXAS 79924 (915) 751-2300
 Telex Number 763861 PWD CO

NAB Exhibitors Directory

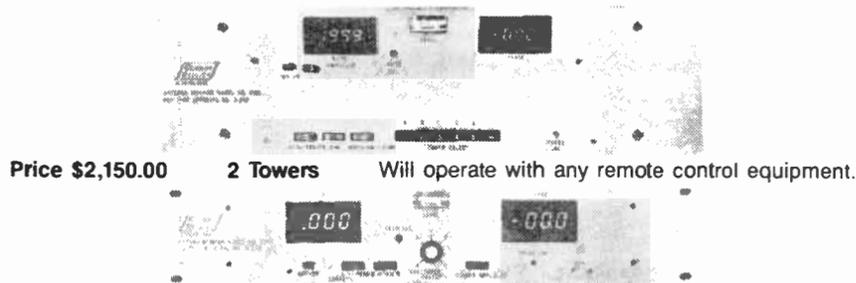


Orban 464A Co-operator

Neotek Corp. 2782 available on records or compact discs; Network
Intro: elan console system. Sound Effects Library available on compact
Network Production Music 2627 discs.
Intro: Network Production Music Library A.C. Nielsen 2798

DIGITAL ANTENNA MONITORS

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Price \$2,150.00 2 Towers Will operate with any remote control equipment.

Price \$1,590.00 2 Towers For AM directionals with studio located at transmitter site.

These monitors are state-of-the-art instruments of unequalled accuracy (.5% or better on ratio and .5° or better on phase) and stability. With typical modulation the true ratio readout of these monitors is a factor of 10 more stable than instruments that measure normalized amplitude, and their phase readouts are rock solid. Phase sign is automatic, no extra operation. In addition to the analog DC outputs for remote control the Model CMR has a multiplexed BCD digital output which can be used to drive the Remote Indicator Model CMR-1. RF inputs have dual protection. Gas discharge tubes across the sample line terminations plus relay protection.

GORMAN REDLICH MFG. CO.

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Circle Reader Service 52 on Page B-31

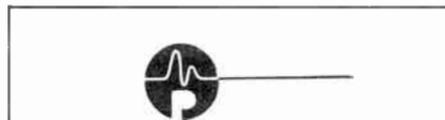
Nortronics Co. Inc. 3384
On Display: Magnetic tape heads for R-R & cartridge recorders.

Omnimusic 2775
Intro: The Professional Bdct Package an exciting, new collection of 30 & 60 second instrumental beds for use in programming & production.
Also: The Omnimusic Production Music Library a diverse collection of instrumental themes for use in industrial, educational & bdct productions.

Orban Associates 3444
Intro: XT2 six-band limiter accessory to the 8100A Optimod-FM®; Orban 9100B Optimod-AM® audio processing system; Orban 787A programmable mic processor; Orban 464A co-operator™.
Also: Orban Stereo Television System; Orban 8100A/1 Optimod-FM audio processor/stereo generator.
Contact: Howard Mullinack
645 Bryant St.
San Francisco CA 94107
415-957-1067.

Otari Corp. 3246
Intro: The DTR-900 is a 1" 32 channel professional digital recorder in the PD format; The MX-80 is a 2" analog recorder available in 24 track or 32 track versions; the CTM-10 is an NAB style professional cartridge recorder/reproducer.
Also: Otari will be exhibiting its full line of professional, open-reel tape recorder/reproducers for bdct applications. Shown will be the MX-5050 Series; the MTR-10/12 Series; the MX-70; the MTR-20; the MTR-90 and the DP Series of tape duplicators.

P



Pacific Recorders & Engrg Corp. 3151
Intro: New compact stereo mixer designed for news, on-air production & remote production, available in rack mount & portable versions.
Also: Full line of on-air, production and newsmixer consoles; Tomcat & Micromax cartridge machines; peripheral equipment; samples of a wide range of studio cabinetry & custom systems will be displayed.
Contact: Sandra Berenics
2070 Las Palmas Drive
Carlsbad CA 92008
619-438-3911.

Paltex 3260
Intro: Eddi, a new dramatic concept in off-line editing.
Also: Esprit Plus; Edit-Stars; the Producer; Excel; Abner.
Contact: Dan Hair
2752 Walnut Ave.
Tustin CA 92680
714-838-8833.

Penny & Giles 2774
On Display: Audio and Video controllers: slide, rotary, quadrant, digital and motorized faders; joystick and T-bar controllers.
Performance Group Inc. NA

To Find The Best-Built Broadcast Audio Amplifier... You've Got To Look "Under The Hood."



From the outside, most broadcast power amplifiers look pretty much alike. (After all, audio power amps are designed to be heard, not seen.) And this might lead you to suspect that the major brands are pretty much alike on the inside as well.

So you buy the best-known brand, right?

Wrong. Because on the inside, there are important differences among amplifiers. And the fact is, the best-known amplifier ISN'T the best-built amplifier...

The best is BGW.

Once you look inside a BGW broadcast power amp, the evidence becomes clear. Compare the BGW 85, our popular 35 watt-per-channel stereo monitor amplifier, with its best-known competitor:

DESIGN FEATURE	BGW 85	BEST-KNOWN COMPETITIVE AMP
Front panel mounted magnetic circuit breaker	YES	NO Rear mount fuse
Welded steel construction for superior RFI shielding	YES	NO Aluminium chassis
High-efficiency, low noise toroidal power transformer	YES	NO Conventional power transformer
Choice of active or transformer balanced input options	YES	NO Transformer input option NOT available
Full complementary discrete circuitry for optimum performance	YES	NO Quasi complementary circuit design
Plug-in modular design for fast, easy servicing in the field	YES	NO Hard wired, precludes module swap

While the other brand is a competent performer, as a broadcast engineer you can readily appreciate the extra care in engineering we put into the model 85. And every BGW amplifier is built with the same total commitment to engineering excellence.

So to be sure your next audio power amplifier is better built on the inside, just make sure that it has the BGW logo on the outside.



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Circle Reader Service 94 on Page B-31

NAB Exhibitors Directory

R S

Peter W. Dahl Co. 222

Intro: Complete pre-wired line transient suppression assemblies using a specially selected combination of fast acting Selenium & high energy MOV's for maximum safety & protection of your equipment; Custom high voltage power supplies for TV Klystron applications.

Also: High level modulation transformers & reactors for 1 & 5 kW xmtrs, including dry & oil-filled types; single & three phase plate transformers for 1 & 5 kW xmtrs; three phase high voltage full wave bridge rectifier assemblies for RCA F-line & other similar type xmtrs.

Contact: Peter Dahl
5869 Waycross
El Paso TX 79924
915-751-2300.

Pioneer Electronics 3546

Pinzone Comm. 2411

On Display: CPG AM Antiskyswave antenna.

Contact: Basil Pinzone Jr.
14850 Cross Creek Park
Newbury OH 44065
216-564-9093.

Potomac Instruments 3329

Contact: David Harry
932 Philadelphia Ave
Silver Spring MD 20910
301-589-2662.

Professional Systems Network 2486/87

On Display: Introduction of the 1987 national production seminar schedule.

Q

QEI Corp. 3336

Intro: Latest advances in reliable solid state FM amplifiers for all power levels.

Also: 691 modulation monitor/test set; FM exciters; FM xmtrs from 1 watt to 60 kW.

Contact: John Tiedeck
One Airport Drive
Williamstown NJ 08094
609-728-2020.

Quantum Audio Labs 3446

Radiation Systems 2929

Intro: TVRO System; SNG antenna.
Also: 5M ESA; 5.5 ESA.

Radio Resources Inc. 2833

RADIO SYSTEMS

Radio Systems Inc. 2680

On Display: Our complete line of custom studio cabinetry, including console tables, R-R cabinets, turntable pedestals, equipment racks & CD & cart storage units, in several formats, for budget minded installations to the ultra-complex studio, including the PA-1 phono pre-amp ESA-10 bdct console; DA-16 & DA-8 dist amps; full line of LED metering systems; key/cart cartridge machines; DCX line of studio products; TM-2 & TM-2R studio timers; CL-2 studio clock.

Contact: William Wohl
5113 West Chester Pike
Edgemont PA 19028
215-356-4700.

Ram Bdct Systems 3028

R-Columbia Products 2671

Reach Electronics 2437

Register Data Systems 2505

Intro: New log generator with user defined log & priority stop sets; competitive product report & aged collection report by sales person.

Also: Broadcast computer system including software traffic, accounts receivable, accounts payable, payroll & general ledger; also ROS Music Master for creative music playlist.

RE Instruments Corp. NA

RF Scientific Inc. 2701

RF Technology Inc. 2809

Intro: UPL-200 Ultra portable xmtrs for ENG/Sports applications; the Flashback range of low cost ENG xmtrs for truck/suitcase applications; the Longranger ENG repeater for extended ENG coverage.

Also: RF-200 portable ENG receiver; RF-1300/1301 portable 13GHz systems; RFL Series of fixed microwave for STL, TSL & inter city applications; RF 710 10 watt 7GHz power amps, RF-218 ENG power amps for truck/building applications.

Riviera Bdct Leasing 2793

Rohn 2449

On Display: Communications support structures & equipment shelters.

Schafer World Comm Corp. 3353

Intro: Random access compact disc player, 60 disc capacity; Stereo digital reproduction for commercials & music; Ultimate in user-friendly telephone equipment for broadcasters.

Also: Latest version random access compact disc equipment for live & automated operations; Audio consoles 2000 & 8000 Series, 5 to 16 channels; Digital audio equipment; full line of Schafer Program Automation equipment, including the Schafer Ready-Spot.

Contact: Bob Dix
PO Box 31
Marion VA 24354
703-783-2001.

Scientific-Atlanta 3272

On Display: DAT-32 digital audio terminal.

Selco/Sifam 2450

Intro: Fuseholders.

Also: A variety of Collet & Push-On knobs as well as plain & printed push-buttons, also Vu & PPM meters; our audio level indicators are stock & range from \$18-\$24 depending on quantity.



Radio Systems ESA-10 Broadcast Console

Sennheiser Elec. Corp. 2914

Intro: New Six Pack portable wireless receiver package; also a new monitor headphone as well as the MKE 42PU cardioid gooseneck mic with built-in 48V phantom powering.

Also: Our full line of professional microphones, headphones, wireless equipment & infrared listening devices; also on hand will be the M-8 portable mixer for film, EFP & ENG.

Sescom Inc. 3445

Intro: AG-1 audio generator/rack-mountable; PG-1 TV pattern generator/rack-mountable; SAT-2 audio leveler for satellites/rack-mountable; MLD-6 dual mic-line driver/rack-mountable; TR & IL Series; PO-44 thru PO-52 nine units added to the portables line.

Also: Representative portion of over 300 audio transformers, modules & electronic products we manufacture.

Contact: Brenda Miller
1111 Las Vegas Blvd N.
Las Vegas NV 89101
702-565-3400.

SG Communications 2535

Shively Labs 2442

1/2 wave spaced broadcast antennas; vertically polarized FM broadcast antennas; custom FM broadcast antennas with horizontal/vertical ratios.

Also: Circularly polarized FM bdct antennas, panel antennas, horizontal-only antennas, rigid coax transmission line & coax components, branched & balanced FM combiners, RF Patch Panels, AM/FM isocouplers, hybrid power combiners, harmonic filters, directional couplers, pressurization equipment, FCC directional & omni directional pattern studies, VSWR monitoring, display & protection systems, SIKA TV bdct antennas.

Contact: Jonathan Clark
19 Harrison Rd.
Bridgton ME 04009
207-647-3327.

Shure Brothers Inc. 3320

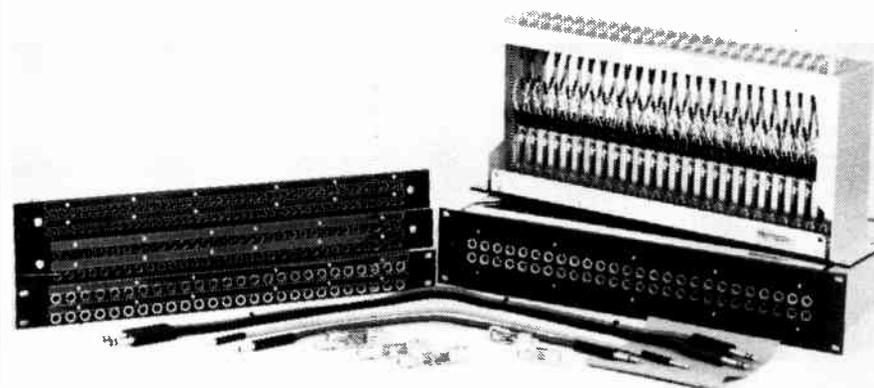
Intro: SM89 Shotgun mic; FP51 compressor/mixer; BC Series of bdct phonograph cartridges; Shure family of wireless mics.

Also: FP Series of field production mixers & amps; SM Series of bdct mics.

Singer Products 2584

On Display: AM & FM transmitters.

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WHETHER IT'S standard wired audio panels, custom-wired audio panels, panels with jacks, panels without jacks, patch cords, telephone jacks, Polysand, patch cord holders—whether it's one or a thousand you need—we've got everything immediately available to help you get your installation or expansion completed ON TIME!

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R.F. Specialties of Florida
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Niceville, FL 32578
Bill Turney
(904) 678-8943

RF Specialties Group

NAB Exhibitors Directory

Sloan, Leonard & Assoc. 2821
Sono-Mag Corp. 3480
Soundcraft Electronics 2770
 Intro: SAC 2000 On-Air & production broadcast consoles; TS-12 multi-track production mixing console.
 Also: TS-24 multi-track tape recorder; Saturn multi-track tape recorder; Series 200 production mixers available with sweep equalization & stereo inputs.
Soundcraft USA 2770
 Intro: SAC 200 broadcast console; TS 12 multitrack production console.
 Also: SAC 2000 on-air bdct console; Saturn 24 trk tape machine with total remote; Series 200 consoles; TS 24 multitrack production console.
Soundmaster Int'l Inc. 2780
 Intro: The Soundmaster integrated editing system.

Also: Soundmaster™ control software for electronic audio post production.

Sound Technology 3328
 Intro: 3100A programmable audio generator outputs Sinewave, Squarewave, IM, toneburst & Sine/Step.
 Also: 1710A distortion measurement system; 1510A audio test system.
 Contact: Kent McGuire
 1400 Dell Ave
 Campbell CA 95008
 408-378-6540.

Soundtracs 2454
 On Display: Soundtracs mixing consoles; FMX stereo rack mount mixer; M-Series.

Soundtrack/Aircraft 2554

Stanton Magnetics Inc. 3331
 Intro: The Dyna 30M/SR disco headphones.
 Also: Complete line of cartridges & styli for use with turntables; also headphones, 310B preamp & record card products, as well as the PBR Series announcers earphone & the Stanton Inertial microphone.
 Contact: G.L. Bidwell III
 200 Terminal Drive
 Plainview NY 11803
 516-349-0235.

Stantron Unit of Zero Corp Status Cabinetry 2911 2909

Straight Wire Audio 2518
 Intro: CD Cue II, Speed demon 5 speed controller; EZ wider stereo spatial expander.
 Also: SWA phono preamps; mic preamps; line amps & dist amps; ITC cart machine replacement amps & matrix amps; Scamp rack audio processors, vocal stresser transdynamic/compressor expander ad mix digital mixer.
 Contact: Bill Sacks
 2611 Wilson Blvd
 Arlington VA 22201
 703-522-7780.

Strata Marketing 2689

Studer Revox America 3048
 Intro: Studer A807 compact professional recorder; C279 compact mixer; A820 multichannel recorder.
 Also: A800 & A80 Series multi-track tape recorders; A820, A812 & A810 two track audio recorders; PR99 & B77 compact audio recorders; B215 & A710 professional cassette decks; 900, 961/962, 963 & 970 series mixing consoles; Philips LHH 2000; Studer A725 & Revox B226 prof CD players; TLS 4000 synchronizers; SC 4008 & SC 4016 system controllers; 2706 studio monitor loudspeakers; telephone hybrid systems.
 Contact: Thomas Mintner
 1425 Elm Hill Pike
 Nashville TN 37210
 615-254-5651.

Sunspot 2679
Swintek Enterprises 2413

Intro: Mark 200d/C-s radio intercom which interfaces with RTS or Clearcom; The Mark QDC video camera receiver & lavalier for pro news teams.
 Also: Radio intercoms for use with RTS & Clearcom; 20 channel RF intercom, radio microphones & antenna systems.



Studer A-807 Recorder-Reproducer

Switchcraft Inc 2711

SWR Inc. 3350
 Intro: FM antennas, single channel & multi-station.
 Also: High power TV antennas, Rigid coax & system accessories.
 Contact: Jack Kruger
 PO Box 215
 Goffstown NH 03045
 603-529-2500.

Symetrix Inc. 2519
 Intro: 109 auto-nullline hybrid, single line hybrid for the purpose of interfacing audio equipment to two-wire telephone lines.
 Also: TI-101 single line telephone interface; 104 multi line telephone interface; 108 bdct telephone interface; 528 voice processor; CL-150B fast RMS compressor/limiter; 501 peak-RMS compressor limiter; 522 comp/lim/exp/gate/ducker.
 Contact: Lavina Speer
 4211 24th Ave West
 Seattle WA 98199
 206-283-2555.

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Converting your AM station to conform to the new NRSC standard is easy with CRL's new products for the AM broadcast marketplace. These easy to install, cost effective units are timely answers to your efforts to convert to the new NRSC standard. We offer products for both the transmission and reception ends of your station.

SPF-300

STANDARD PRE-EMPHASIS/FILTER FOR AM BROADCAST TRANSMISSION



For the transmission end of your mono AM station, we offer the SPF-300 Standard Pre-emphasis/Audio Low Pass Filter. The SPF-300 contains these functions as two separate loop-through ports, the first of which is the pre-emphasis function. This pre-emphasis function conforms to the NRSC curve, and is connected into the audio path directly in front of the station's final peak limiter. Your station's peak limiter then feeds the second section of the SPF-300, which contains a delay equalized and overshoot-corrected low pass filter. This CRL patented design allows the sharp filter response at 10 kHz called for by the NRSC standard without loss of peak modulation capability. In addition, the SPF-300 includes a selectable tilt correction circuit, plus modulation asymmetry control. All functions of the SPF-300 may be bypassed for ease of system testing. Stereo applications should use a matrix type final limiter like the CRL SMP-900.

MDF-400/800

DE-EMPHASIS/FILTER FOR AM MONITORS



For the reception end of your AM station, we offer the MDF 400/800. The CRL Monitor De-Emphasis/Filter provides all the functions required to update any AM modulation monitor or wideband receiver for the new NRSC standard. The MDF 400/800 emulates the audio characteristic of the best-possible commercially produced radios. The MDF 400/800 consists of three selectable function blocks, which includes the standard AM de-emphasis curve, a high Q-10 kHz notch filter, and a switchable 9.5/11 kHz low pass filter. All of the function blocks are controlled from the front panel. The unity gain MDF 400/800 is fed by your existing monitor source. The MDF 400 is for mono applications; the MDF 800 is for stereo applications.

The price of AM improvement is nice too! The SPF-300 list price is only \$495.00, the MDF-400 (Mono) \$295.00, and the MDF-800 (Stereo) \$395.00. These units are available for purchase now. If you need more information on these units, or want to talk about the improvements that the new NRSC standard offers, please call us at (800) 535-7648, or write to us at the address below.

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 Tempe, Arizona 85282
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 TELEX: 350464 CRL TMPE. UD.

NAB Exhibitors Directory

Systemation Corp. 2458
Intro: Complete random access 8mm digital cassette automation; remote control automation; supertrack satellite automation; PC playlist; electronic validator.
Also: Satellite/cassette automation; full stand alone cassette automation; live assist cassette automation; automatic telephone record/play; automatic time announce; automatic temp announce.

T

Taber Mfg/AVSC, Inc. 3333
On Display: Model 409 & Model 1500H tape degaussers.

Tapscan Inc. NA
On Display: HOTWARE, the hottest software in the industry.

Tascam 3416
Intro: ATR-80/24/32 2" multitrack; LV-200 laser disc recorder; 122 MK II latest version of the 122 broadcast recorder; ES 50/501 SPMT code multimachine synchronizer; M-300B latest update of the M300 Series now including internal phantom power.

Tekno Inc. 2472
Telex Communications 3370
Intro: FMR-4 professional FM wireless microphone receiver.

Also: Cassette copiers, R-R/cassette duplicators, Audiocom intercom system, headphones/headsets, wired & wireless microphones, IFB & ENG electronics, Sound slide projectors.
Tennaplex Systems 2812
Intro: Multi-station combiner capable of handling up to a megawatt of prime power; Broadcast antennas with ideal vertical patterns.

Also: A series of FM & TV broadband panel antennas with true circular polarization & with the capability of serving as master multi-station broadcast antennas without compromise to the radiated pattern of any station & without electrical interaction with the tower.

Texar Inc. 2571
Intro: Texar RCF-1 replacement card No. 5 for Orban Optimod® 8100; Texar AMC-2 Eagle monaural AM modulation controller, conforms to new NRSC AM audio standard; Texar Gemini™ stereo AGC amplifier.
Also: Texar Ausio Prism™ digitally controlled audio processor.
Contact: Glen Clark
616 Beatty Rd
Monroeville PA 15146
412-856-4276.



TFT Inc. 3420
Intro: EBS, FM/AM System with time remaining clocks, possibly, new RPU, frequency agile, multichannel systems.
Also: Aural STL Models 8300 & 7700 composite; Model 8600 discrete; most comprehensive selection of STL systems available, with IF repeaters, combiners & splitters; 10 channel starter remote controls system, expandable to 120 channels, 8610 Series; Model 844 FM baseband/stereo monitor; Model 753 AM monitor; full line of EBS Systems.
Contact: Jesse Maxenchs
3090 Oakmead Village Dr
Santa Clara CA 95051
408-727-7272.

TOA Electronics Inc. 2498
Transformations 2631
Trompeter Electronics 3346

U

Unicol Products Inc. 2474
United Ad Label Co. 2459
Intro: Additional pressure sensitive color coded status identification labels for audio reels, e.g. 4 track, 24 track & pinfeed custom painted audio cassette labels.

United Ropeworks 2420
On Display: Phillystran HPTG, electrically transparent, maintenance free tower guys & specially designed systems for high power applications.

Urei 2727
Intro: Urei Time-Align® studio monitors, featuring new C versions.

Also: Urei On-air broadcast consoles; Urei EQ's, limiter/compressors & specialty signal processing.

U.S. Tape & Label Corp. 2630
On Display: A multi-faceted specialty printing company, providing the broadcasting industry with printing & marketing information on the use of bumper strips, we offer support pressure sensitive labels such as concert patches, etc.

Utility Tower Co. 3485
On Display: Actual AM, FM, TV, tower sections.

V

Valley Int'l Inc. 2747
Intro: Model 816 Leveller module for 800 Series; Model 817 Comander module for 800 Series; Autogate a highly sophisticated noise gate/expander.
Contact: Tom Irby
2817 Erica Place
Nashville TN 37204
615-383-4737.



Varian Associates 3206
Ward-Beck Systems 3060
On Display: Professional audio mixing consoles for the radio, TV, film & sound reinforcement industries; television plant communications systems utilizing both discrete & microprocessor control systems; audio distribution amps, in both self-powered & centrally-powered configurations; portable & rack-mounting VU/PPM audio test meters.
Wavefront Technologies 2590

Wheatstone Corp. 2400
Intro: The SP-6 radio production console, featuring stereo & mono input modules with machine control & remote on/off capabilities as well as control room & studio muting & tally system; MTX-1080 reinforcement console.
Also: SP-5 stereo production console; A-500 on-air console & AP-500 audio console.
Contact: Michael Shane
6720 V.I.P. Pkwy
Syracuse NY 13211
315-455-7740.

Whirlwind 2643
Wireworks Corp. 2401
World Tower Co Inc. 2814

RTW Peak Meters Accuracy . . . Reliability . . . Quality

Stereo Peak Program Meter Model 1108

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Stereo Peak Program Meter Model 1227

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- +20dB scale expansion

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March 15, 1987 Issue Use until June 15, 1987

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C. Educational FM station	H. Consultant/ind engineer
D. Combination AM/FM station	I. Mfg, distributor or dealer
E. Network/group owner	J. Other

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THE VERY HEART OF YOUR TAPE MACHINE

Can you trust it to just anyone?

JRF is proud to offer a complete laboratory facility consisting of the latest in state of the art magnetic head refurbishing and optical alignment equipment.

Our staff represents over 20 years of involvement in the design manufacture, and precision service of magnetic recording heads; and it is dedicated to the continuous updating of techniques and procedures to meet the everchanging demands of the industry.

Our studies show that in most cases worn, unserviceable magnetic heads for RECORDING STUDIOS, TAPE DUPLICATING, MASTERING, AND BROADCASTING can be restored to original performance specifications for a fraction of the cost of replacement. If in our FREE EVALUATION heads are found to be unrepairable, JRF maintains one of the largest inventories of premium quality direct replacement heads, as well as heads for custom and modification applications.

JRF/Magnetic Sciences, Inc.

The audio magnetic professionals with the track record to prove it.

P.O. Box 121 • Greendell, NJ 08739 • 201/579-5773 • Telex: 325-449



A SUCCESS STORY

THE OBJECTIVE was no small task: design a radio console that would become the new standard.

THE METHOD involved listening to veteran broadcast engineers and installers. After all, they're the people who have seen and experienced all the ideas that came before. From this research we learned of the problems that had to be solved and the features that broadcasters required. We then added ten years of console building experience and innovation, and created the A-500α console.

THE RESULT: An unsurpassed console that exceeds prior broadcast standards. Its module/mainframe interface borrows from the computer industry, utilizing all-gold contact insulation displacement technology. The logic system is based on programming the module slot, allowing full module interchangeability. It also provides for separate programming of the module's "B" input selection, thus avoiding embarrassing false starts and mutes. Full console-to-machine control is supported without extensive use of interface boxes and cables. Three audio busses are provided to enhance talkshows and remote functions. There are separate processing loops for the speech and music paths, as well as individual channel insert points. A complete line of microphone and line inputs, remote selectors, and machine control modules is offered in virtually any combination, configuration or mainframe size you desire. The A-500α also features a full family of studio turret and turret components to ease facility design.

THE PERFORMANCE: Needless to say, it's a new age for audio, and the A-500α is a step ahead. While specifications don't say it all, ruler flat frequency response, .003% distortion, crisp square wave response and a noise spec that's unheard of deserve merit. Couple such performance, reliability and innovation together, and a new broadcast standard is set.

THE SUCCESS: WHEATSTONE broadcast consoles are installed in major markets all over the country, from frontline independents to national networks. They are in use right now at some of the world's largest institutions.

THE POSSIBILITIES: The possibilities are up to you.

 Wheatstone Corporation
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