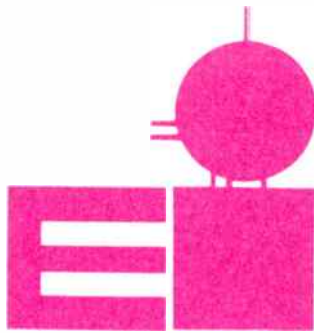


March/April 1994

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NAB '94 A BRIEF OVERVIEW

If crowds are any indication it would appear that the broadcast industry is recovering quite nicely from the economic slowdown of the past couple of years. It was wall-to-wall people at the Las Vegas Convention Center during the week of March 20—24. Over 71,000 people attended, setting a new record.

As was expected the big thing is "digital" and almost every equipment exhibit has something digital to display. However, there were still a considerable number of "analog" equipment items on display for those who either aren't ready, or can't afford a complete changeover to digital.

Companies such as Audicord, Fidelipac and ITC still have tape cartridge machines available along with their digital counterparts and reel-to-reel tape recorders are still available from companies such as Tascam, Otari and Studer.

There is no getting away from the fact, though, that digital is the direction things are going. Hard disc systems, digital audio workstations and digital audio processing and transmission drew the most people to the exhibit booths.

As usual there were many sessions on various subjects related to broadcasting for managers and engineers, and these again are separated as to radio and TV and some of general interest to everyone. It would be rare if you could make it through without one or two scheduling conflicts on the topics that interested you the most.

Briefly summarizing some of the more general interest items, Dick Smith of the FCC, said that there should be a report and order out sometime in April on a new EBS system. The goal is to have a unified system where broad-

casters, cable TV operators and satellite facilities would all be participants. Paul Montoya of Broadcast Services of Colorado, gave a report on the EBS tests which were conducted last year in Denver and Baltimore. Darryl Parker of TFT and Jerry Le Bow of Sage Alerting Systems, two of the manufacturers participating in the tests, gave their views and promoted their systems. Le Bow also charged that much of the delay in getting a new system was due to NAB not backing any system. At a panel discussion the next morning Michael Rau of NAB, said that there are a good many broadcasters, both managers and engineers, who question the value and necessity of another system. The cost of implementing a new system is also of concern both to broadcasters and cable TV operators. It appears that the controversy over a new EBS system could go on for a while.

Another subject of interest to all broadcasters is the RFR (Radio Frequency Radiation) issue, which was addressed in a panel discussion Monday afternoon. A major concern is that a number of state and local government agencies are enacting their own restrictions on RFR which are unreasonable and not based on hard facts. It was pointed out that anything which is even suggested as being a possible cause of cancer is going to cause some "knee-jerk" reactions and it is therefore hoped that the federal government would preempt local and state ordinances on RFR standards. Whatever standards are finally set by the FCC, it was stated that they should be reasonable and based on hard data.

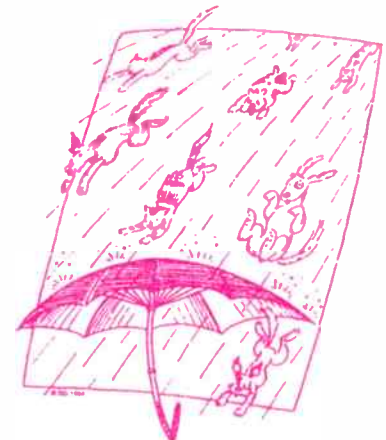
Bill Hassinger of FCC, in another panel discussion, said that the Commission plans on addressing more policy

issues this year. As for DAB, the Mass Media Bureau plans to do what it can for the terrestrial broadcaster in this area.

On the same panel Chuck Kelly, SBE National Chairman, stated that there are 30% less engineering jobs in the broadcast industry. He said the SBE is working to improve the situation.

There were many sessions covering specific areas of interest and reports on the topics covered can be obtained from NAB for those who are interested.

From the NAB's standpoint this was a very successful convention. However, since the attendance goes up every year the question has to be asked how long it can continue before it becomes necessary to split Radio & TV because of space limitations and have a separate convention for each. Not only are there more people attending from the US broadcast industry but there are increasing numbers of broadcasters from other parts of the world attending, making this an international broadcast show.





Editor's Notebook

I finally worked up enough nerve to go back to an NAB Convention for the first time since the 1990 one in Atlanta, and there was a period during the first couple of days when I began to regret my decision.

I left Milwaukee on Sunday morning and had to change planes at Denver. Bad weather caused an hour delay in leaving Milwaukee so I ended up missing my connecting flight at Denver. Now, Stapleton Airport is a nice place to visit but I wouldn't want to live there and after spending about seven hours wandering around the terminal trying to get one of the other flights, I was beginning to think I might have to take up residence there. ("There's a big convention in Vegas and everything is booked full".)

At any rate I finally got into Vegas late Sunday night, however, the fun was not over. Upon arriving at the convention center Monday the registration lines stretched as far as the eye could see and this after NAB had said that if you registered before a certain date they would mail your credentials to you. Well, I did and they didn't, for whatever reason, and so there went another hour of time that could have been spent doing something useful.

The number of people attending this year was unbelievable. Something over 71,000. I can't believe that if attendance keeps increasing every year that NAB won't be forced into splitting into separate Radio and TV conventions, exclusive of the fall Radio Show. Although, now that the fall show has been combined with the SBE national convention and the news people convention it might make it more difficult.

It would seem to me that it might be possible to take an entire week in spring and have one group the first part of the week and the other group the second part of the week. The attendees and exhibitors who are involved with both Radio and TV could stay for both sessions while those who are strictly one or the other could attend the session of their choice. I don't know how practical something like this is but it should be worth looking into.

I didn't get to attend all the sessions that I would have liked to but from the ones I did attend I came away with the idea that a new EBS system may or may not be just around the corner and a lot of work remains to be done on RFR standards. Naturally, there were a considerable number of sessions which addressed specific technical areas of broadcast but those are beyond the scope of this column.

There didn't seem to be an overwhelming number of new products but then I didn't spend much time in the TV exhibit area so I can't really speak to that part of the show. In fact, unless you are on roller skates it is almost impossible to cover everything.

Some of the newer technical things which did catch my eye were things such as the Cutting Edge new AM audio processor, the Unity 2000AM. In addition they have come out with a software package that allow you to adjust the processing from a PC at a remote point for both the Unity 2000i FM processor and the 2000AM. They also displayed the VIP-1 Voice Processor, manufactured by Yellowtec of Germany. This unit allows each individual announcer to set the processor to his own personal taste and then store the settings on a plug-in card. Thereafter, whenever there is an announcer shift change all they have to do is plug the card into the processor and it returns the operating parameters to that announcers personal settings.

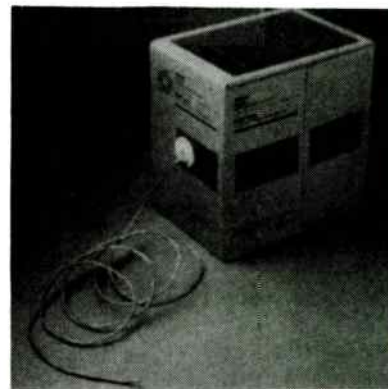
Other interesting offerings were a Digital Cartridge machine by AIRcorp Systems using a 3.5" magneto-optical disc capable of storing up to 11 minutes of non-compressed audio at a 48kHz sampling rate. Marti Electronics will be coming out shortly with a tunable RPU receiver. There were also optical mini-disc machines from Tascam and Sony. Items which weren't expected to hit the professional market for a year or two yet.

Radio Design Labs, as has been their custom, has come out with a couple of new products to add to their "Stick-On" line of modules. Two versions of a two-tone audio oscillator, ST-OSC2 A&B, and also a 4-input audio switcher, the ST-SX4, and also a Ramp Generator, ST-RG1 and a Remote Level Control, RLC1.

In addition, there was a fair amount of interest in items such as the Delta Electronics SM-1 Splatter Monitor for AM and the Inovonics Model 222 NRSC processor for AM broadcasters who have put off until the last minute coming into compliance with the requirements of NRSC-2, which goes into effect after June 30 of this year. This is the requirement which says you have to make measurements to prove that you are not outside your authorized bandwidth.

That pretty much summarizes NAB '94 for me. Will I go back again next year? Fortunately I don't have to make that decision for another year so until then I'm not going to lose any sleep over it.

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BROADCASTERS PRAISE SENATE INFORHIGHWAY BILL; ASK FOR GREATER SPECTRUM FLEXIBILITY

The nation's broadcasters have applauded new Senate legislation giving TV and radio stations greater spectrum flexibility to offer new broadcast services, but stations also urged that they be authorized to provide non-program related services, giving broadcasters the ability to vie in tomorrow's marketplace with their pay-to-use, wired and wireless competitors.

"Your legislation is designed to encourage as much competition as possible in order to better serve the public," John Siegel, senior VP, Chris-Craft/United Television, San Francisco, CA, and NAB's TV Board Chairman told the Senate Commerce Committee. "Therefore, it seems entirely consistent to provide broadcasters the tools to compete" against cable, telcos, satellites and other communications companies.

Broadcasting "is universal and free to anyone anywhere with a radio or TV," said Ron Loewen, VP/GM, WIS(TV), Columbia, SC. "Once radio and television have transitioned to digital broadcasting, consumers will be able to avail themselves of many new services that can be built into our broadcast service."

Both Siegel and Loewen praised senators for recognizing the historically important role of local broadcasters and the public service they provide local communities. "The wonderful thing about your 1994 (legislation) is that it, too, recognizes broadcasters unique role of localism in the information infrastructure," Loewen said. "It maintains the best of the '34 (federal communication) Act, while moving us forward into tomorrow's technologies and increased competition."

Both also said S. 1822 has proper safeguards to protect consumers and other competitors from unfair monopoly activities by the regional phone companies and other carriers. But Siegel said the Senate measure must include "explicit provisions to ensure non-discriminatory, common-carrier access to any telco's video transmission capacity." Siegel also said the Senate bill still needs effective provisions against anti-competitive behavior, "including swift enforcement with strong penalties to deter abusive behavior."

On spectrum flexibility, Siegel pointed out TV and radio stations would be willing to pay market-rates to provide new services. "In our view, the FCC should be given wide latitude in establishing a fee schedule. The upper rate for a particular service should be established by the (spectrum) auction prices. Yet, if broadcasters services are offered free to the public, then there should be no fee attached. If, on the

other hand, broadcasters begin providing subscription services, and appropriate fee would be warranted," Siegel said.

Siegel stressed these new services won't supersede broadcasters' primary public service obligations. "Congress and the FCC will not allow broadcasters to turn their backs on their primary service and become solely data transmission providers," he told lawmakers.

Siegel also discounted criticism that broadcasters will gain an unfair advantage over other technologies. "The fact is these competitors are asking for no restrictions on their activities, only on ours," he said. He pointed out minorities also will benefit from spectrum flexibility under the current broadcast licensing system, which gives tax certificates and minority preferences in licensing, to obtain broadcast spectrum.

NAB SEEKS IDEAS ON RADIO'S INFORMATION HIGHWAY ROLE

The Radio Futures Committee of the National Association of Broadcasters is soliciting comments, ideas and information about radio's potential roles on the future information highway.

"We're looking for ideas on technical and business innovations that will or can affect radio's future," said Dick Ferguson, president/CEO of New City Communications and chairman of the committee. "We are assessing technologies and business approaches radio can employ to provide expanded services to business and the public."

The Radio Futures Committee was created by the NAB Board of Directors to study and make recommendations on what role radio stations will have and what new services they can provide in the technology and business environment of tomorrow. The committee will review all the comments it receives when it next meets on May 12.

Ferguson requested that all comments be sent to him by April 30 through any of these methods:

Mail- Radio Futures Committee, NAB Radio, 1771 N. St. NW, Washington, DC 20036

Fax- Radio Futures Committee, (202) 429-5406

Internet- Radio Futures at nab.org.



NAB Files Comments On FCC's New RF Exposure Limits

On January 28, NAB filed comments in the FCC's Notice of Proposed Rule Making (NPRM) in ET Docket No. 92-63, which proposes to update the Commission's radio frequency (RF) radiation safety guidelines. NAB supports the FCC's proposal to revise its RF radiation human exposure regulatory scheme and to specify the "ANSI/IEEE C95.11-1992" RFR exposure standard as the basis for its new guidelines. However, in revising the rules, NAB urged the FCC to adopt implementation procedures and to interpret the revised ANSI standard in fashion that will minimize compliance burdens on broadcasters (and other regulatees) while still adhering to the standard's provisions.

As is the case under the Commission's existing RF radiation exposure regulatory system, NAB suggested that the FCC continue the "three-prong" approach whereby stations generally need not make actual measurements to assess and certify compliance. Instead, NAB said, the majority of broadcasters should be allowed to determine their compliance through the use of charts and graphs. NAB also said that compliance with new 1992 ANSI guidelines only should be required when stations file for license renewal or a major facility change and that the FCC should allow for a reasonable transition period, and transition procedures, for implementing its revised rules.

Key to the present FCC regulatory scheme is FCC OST Bulletin No. 65. This document provides detailed guidance for the task of assessing compliance. Similar to the process that surrounded the preparation of the current Bulletin in 1985, NAB urged the Commission's staff to work with various organizations and experts in the science, engineering and regulatory aspects of FR exposure in developing a revised edition of that document. NAB submitted a detailed report prepared by Jules Cohen, P.E. The Cohen report was offered as a prototype revised Bulletin the FCC could use to outline specific compliance procedures.

NAB also suggested that the Commission adopt a rational interpretation of the "controlled" and "uncontrolled" environment provisions of the revised ANSI/IEEE standard and to incorporate reasonable and practical approaches to the regulation of human exposure to "contact" and "induced" currents. NAB also believes the Commission responsibly can continue a program of "categorically excluding" various communications operations from the FCC's RF regulatory program.

Finally, NAB urged the FCC to confront the widespread and growing problem of state and local regulations that have delayed or halted the construction and use of FCC-licensed stations. Urging an FCC policy of federal preemption, NAB pointed out that, unless forceful steps are taken by the Commission, these non-federal regulations might also impede the introduction of new communications technologies, such as HDTV and wireless phone, video, audio and computer services. [Reprint from NAB Radio Tech Check & NAB Associate News]

'Grand Alliance' Selects HDTV Transmission System

The "Grand Alliance" (GA) of HDTV proponents has selected Zenith's vestigial sideband scheme (8 VSB) as its digital transmission subsystem. The decision marks the final major technical step in the process of developing a system that eventually will be submitted for FCC approval.

The GA's verdict resulted from extensive testing of 8 VSB and General Instrument's (GI) quadrature amplitude modulation (32 QAM) system. Zenith and GI are among the GA partners.

8 VSB was chosen for terrestrial and cable HDTV transmission based on its coverage area, minimal interference with NTSC and robust signal quality.

The GA now turns its attention to producing prototype hardware for the complete HDTV system, including: video compression and packetized data based on proposed international MPEG-2 standards, computer- and broadcaster-friendly scanning formats, and six channel, CD-quality digital surround sound.

Meanwhile, the FCC Advisory Committee on Advanced Television Service is investigating Coded Orthogonal Frequency Division Multiplexing (COFDM). COFDM is a transmission technique being developed in Europe and Japan for digital terrestrial TV broadcasting. One of COFDM's major advantages is its ability to overcome multipath.

[Reprinted from NAB Associate News]



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SBE Introduces Radio Station Operator Course

The Society of Broadcast Engineers (SBE) has introduced the SBE Radio Operators Certification Course, designed for entry level operators at radio stations. The course is intended to replace the former FCC Radio Telephone Third Class Operator License with the Broadcast Endorsement, discontinued by the FCC in 1977.

The new program was developed after radio station managers, program managers and chief operators indicated a need for a training and certification program to cover FCC operating requirements, as well as provide an indication of competence of duty level operators. The course satisfies these needs and also covers many of the practical skills required of operators that are beyond the scope of the FCC rules.

The course consists of the SBE Radio Operators Certification Handbook and a customize 50 question examination, drawn from a 150 question pool. The successful applicant will score 90% or higher on the exam, which must be taken within one year of purchase of the handbook. Upon successful completion of the course,

candidates will be issued a certificate as a SBE Certified Radio Station Operator. Details on preparing for the exam are contained in the handbook.

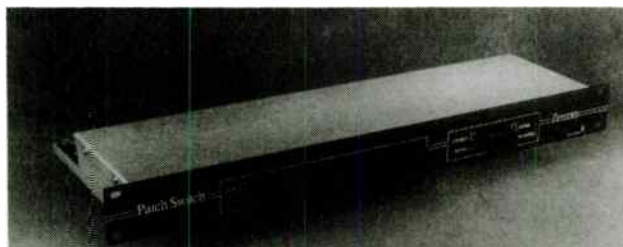
The SBE Radio Operators Certification Handbook is written by John Barcroft, Chief Engineer of Stations KPOP-AM and KGB-FM in San Diego, California and has been thoroughly reviewed by members of the SBE Certification Committee. Barcroft holds SBE certification as a Professional Broadcast Engineer and is Chairman of SBE Chapter 36 in San Diego.

The SBE Radio Operators Certification Course may be ordered through the SBE National Office by calling (317) 253-1640 or by fax, (317) 253-0418. The cost of the course is \$35, which includes the examination fee. Bulk orders of five or more will receive a 5% discount. A candidate's name must be provided for each handbook purchased. Candidates, or their employers, need not be members of SBE to take the SBE Radio Operators Certification Course.

NRSC-2 Waiver To End June 30

The FCC has issued a reminder to AM stations that the temporary "presumptive compliance policy" which allowed stations employing the NRSC-1 pre-emphasis curve to be assumed that they met the NRSC-2 standard, will lapse on June 30.

By June 30, AM stations that have not been making emitted spectra measurements, must resume an annual schedule of measurements.



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Typical Application: In an AM/FM radio station, all studio and automation outputs feed into two patch switches. One switch selects which source goes to the AM transmitter and which source feeds the FM transmitter.

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SOME STATIONS COULD BE ON THE AIR BY SUMMER IN THE EXPANDED AM BAND

If the FCC doesn't get a lot of objections to its allocation process for the expanded AM band (1605kHz-1705kHz), stations could be on the air as early as this summer, according to FCC AM Branch Chief Jim Burtle.

Nearly 1000 stations have applied for the expanded band but the maximum number of stations that could be accommodated, ideally, would be 200. Because of possible interference problems the number could be less.

Burtle said the FCC could have a complete allocation scheme "within a month or two".

The FCC will implement the expanded band as one method for reducing interference and crowding on the present AM band. The "winning" applicants will be allowed to operate at powers of 10kW daytime and 1kW nighttime. They will also be encouraged to operate in AM stereo.

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By M. W. Persons

NAB 94 Convention

This year's National Association of Broadcasters' Convention in Las Vegas was bigger than ever. Attendance figures were up 10% over last year for

an official total exceeding 71,000 people. Attendance by people from foreign countries was up 27% for a total of 14,000. One hundred nine countries were represented. My observations were that they were mostly at the convention for the television part of it.

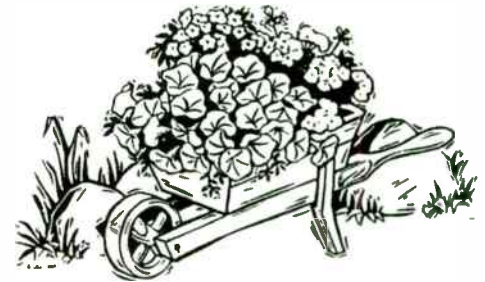
The convention put a strain on the visitor facilities as Las Vegas. Shuttle busses were full, taxis were hard to find, restaurants were full, vending machines were empty, and there were long lines for convention registration.

It makes sense that there will some day be separate radio and television conventions even if they are held on right after the other in the same city. What do you think? In my opinion, radio and television are different enough so that their vocabularies share little resemblance anymore.

The Society of Broadcast Engineers organization was a very visible part of the convention this year. The "SBE Day" featured many good technical seminars. I gave a speech entitled "Being a Good Contract Engineering Person." It was relatively well attended which reflects the fact that about half of the engineering services provided to

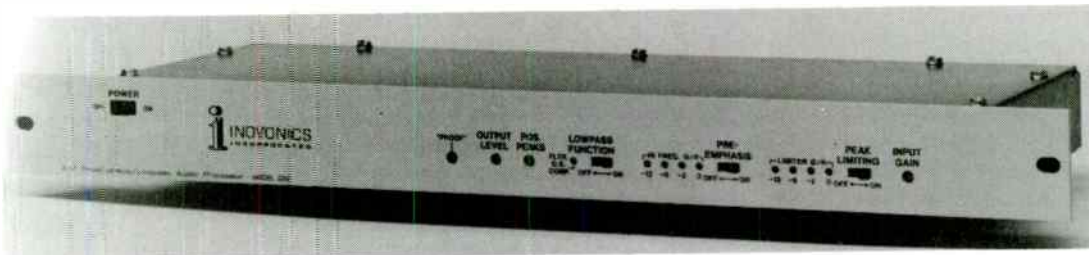
radio stations in this country are done by contractors rather than staff engineers.

There is an avenue where radio and television may be converging. That is in the new area called Multimedia. Broadcasters may soon be in the business of sending digital data to anyone and everyone who owns a computer. The services provided will range from newspapers with sound clips to electronic mail to interactive virtual reality games. The future will be exciting place and I wouldn't miss it for anything.



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Broadcasters Want Cost-of-Regulation Fees To Be Based on Common Sense and Some Form of Uniformity

The National Association of Broadcasters has asked the Federal Communications Commission (FCC) to make several important changes in the way it assesses regulatory fees for radio and TV stations.

In comments to the FCC, NAB told regulations the 1994 user fees for radio stations are particularly unfair. NAB cited a Congressionally-developed, FCC fee-schedule that charges all radio stations in a certain class the same regulatory fee, "whether they are licensed to Chicago or a small community in South Dakota." The FCC found that the statute prevents it from granting radio station relief for FY 1994, but FCC relief could be granted for FY 1995 (October 1, 1994), NAB said.

To provide relief to radio stations, NAB is urging the FCC to base the radio station fee structure on the same scheme used for TV stations. The TV fee scheme adjusts regulatory fees to reflect the size of markets, which broadcast TV stations serve.

In other comments to the FCC, NAB asked regulators not to charge satellite TV stations, which largely repeat the programming of the parent TV station, the same regulatory fee designed to cover the government's full cost of regulation for a regular TV station. NAB also wants regulations to establish one method to determine the size of TV markets, to develop TV regulation fees and other FCC decisions.

NAB also suggested that broadcaster payments to the FCC be deemed timely, if they are postmarked by the due date, rather than requiring them to be received by the due date.

Tower Rule Modifications Submitted to Wisconsin Legislature

The final version of Trans. 56 has been submitted to the Wisconsin Legislature's Joint Committee for Review of Administrative Rules. Over the past year, Richard Wood of Skyline Communications, John Laabs, president of the Wisconsin Broadcaster's Association, and other tower owners have succeeded in persuading the Wisconsin Department of Transportation to downsize the effects of administrative code Trans. 56. Great progress was made during various public and private meetings with the (D.O.T.)

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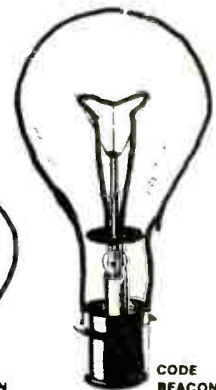
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Trans. 56 was first proposed in late October 1992. The new rules would have set up an elaborate permit process for both new construction and modifications to existing towers and other tall structures.

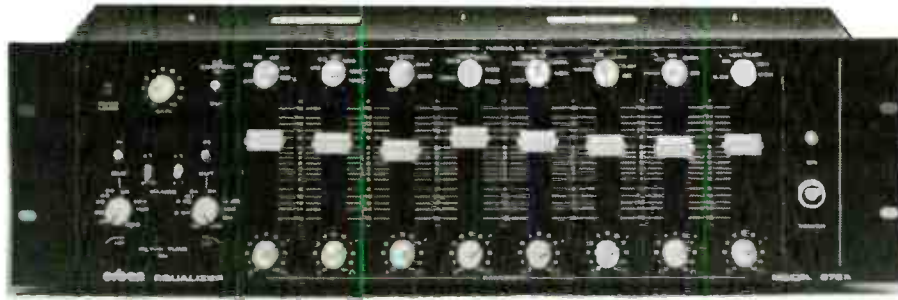
The main items that have been removed from Trans. 56 are: 1. No insurance or escrow account is required; 2. Transfer of the tower permit when

the property sells is automatic by simply notifying the D.O.T.; 3. If a tower collapses a new permit does not need to be applied for if the new structure is erected within 60 days and does not exceed previous tower height; 4. The secretary does not need to be notified if modifications are made to the tower that do not change the overall height;

(Cont. to pg. 13)

The Orban 672A Graphic Parametric Equalizer

The power of a parametric. The convenience of a graphic.

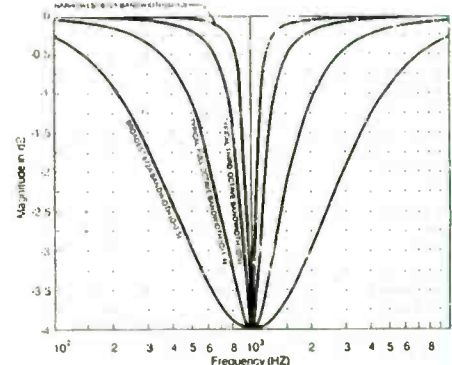


Use the 672A in the production studio to enhance the announce mic, sweeten music, and to create special production effects that make your station stand out among its competitors. Meanwhile, another 672A can be quietly and efficiently equalizing the program line for maximum punch and brightness on the air. The 672A can equalize phone or remote lines for flat response - Its much more versatile than the standard phone company equalizers. In the main studio, use it on the announce mic channel to equalize for maximum presence, and also to notch out mechanical hum from cart meachine monitors, air conditioning, and similar noises. Whatever your application, the RF suppression and optional output transformer of the 672A ensure problem-free installation in high-RF environments.

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Various Bandwidth Dipping Curves (4dB Dip)
Model 672A

Do You Want A Piece Of Equipment That Rides Level The Way Your DJ's Should?

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Compellor Dual Mono/Stereo Compressor/Leveler Model 320

MF's List

Price \$1,350.00

Call for E. I. Price



The Compellor Model 320 builds upon the legacy established by the Model 300 in dynamic audio processing. The 320 delivers intelligent compression, leveling and peak limiting simultaneously. Patented control circuits include analog computers that constantly analyze the input signal and vary the control characteristics. This provides for invisible operation regardless of the dynamics of program. Simply adjust the drive level to generate the desired amount of processing, set the process balance between leveling and compression and adjust the output level for unity gain. The Compeller will then provide complete dynamic control - smooth, inaudible compression, increased loudness, desired program density, and the freedom from constant gain riding - all automatically. Its unique circuitry actually enhances transient qualities, making even heavy processing undetectable.

This smart, versatile and cost effective processor is equally at home in broadcast processing, microphone control, audio recording and production, tape duplicating, live sound and film dubbing.

The 320 features dual mono operation which allows completely independent processing of two mono sources as is sometimes necessary in music recording, post production or sound reinforcement. Two modes of stereo are offered by linking the leveling control signals or linking both the compression and leveling signals. A simple metering select alternates the display of input, output or gain reduction levels. All potentiometers are detented for accurate resetting of controls. Leveling speed (fast/slow) is switch selectable from the front panel as is a defeat for the peak limiter.

On the back panel, the operating reference level is switchable from -10, +4, or +8 dBm and RJ-11 connectors facilitate remote, relay bypass of the unit

Intelligent AGC for consistent program levels

"Invisible" compression for tighter dynamics without audible effect

Instantaneous peak limiting for equipment protection (with Defeat)

Adaptive control circuits for simple set-up and no readjustments for varying programs

APHEX SYSTEMS 111068 Randall Street, Sun Valley, CA 91352 - (818) 767-2929 FAX (818) 767-2641. Aphex is proudly American.....100% owned, engineered and manufactured in the U.S.A.

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Technical Tips

by John Bredesen



NAB DIGITAL

The 1994 National Association of Broadcasters Convention is history. The single word the convention brought to our industry with a very loud voice is: DIGITAL!

It really didn't matter if your bag was Radio, Television or Multimedia, there was something for everybody that did some process or other with ones and zeros, from digital mixing consoles to portable TV news cameras that used floppy discs. "You pays your money and takes your chances", as someone once said. I'd like to share some of my impressions since I was a legally constituted attendee for a change.

My interest at the show this year fell into three broad areas:

1. Razor blade elimination
2. Audio cart elimination, and
3. STL path fade elimination.

Just about everybody who's been in the Radio business for more than a week knows the fastest and easiest way to do simple "news" type editing is with a razor blade and splicing tape, right? In fact, it's possible to do some very sophisticated editing this way, and rather quickly when enough practice is gained. Electronic editors have been around for several years, but with rather steep price tags. The first practical units were expensive, used proprietary hardware and software, and tended to be what's called, "not user friendly". Razor blade sales remained brisk.

Plunging prices of computers have effectively changed the picture. I'll mention three software and/or hardware combinations which caught my eye. They work on standard IBM or com-

patible clones. This report certainly isn't intended to be comprehensive, but the three cover a huge range of capabilities.

The first is a package consisting of a sound card and software designed specifically for news editing. As such, it edits only mono audio, and with a low sampling rate of 22 KHz, it uses hard disk space sparingly, but the resultant 10 KHz frequency response is perfectly adequate for voice. It comes bundled with additional software to capture (onto the hard drive) and display stories from wire services, which it will do in the background while a news actuality is being edited. It appears to be very quick, easy, and intuitive to use. It's from a Canadian company called Videoquip (416/293-1042), and sells for around \$2,000. It will run on a 80286 if you should have one lying around. It requires about 2 Mb of memory per minute of audio, which compares to about 10 Mb per minute for CD quality stereo on other editing setups.

For a year or two there's been an audio card advertised in various publications with the unusual name of CardD. It's a proven product and now there is good software to go with it. The manufacturer of the CardD, Digital Audio Labs of Plymouth, Minnesota (612/473-7626), has demonstrated a software program with the unique name, "Fast Eddie". This program, which works within the Microsoft Windows environment and therefore requires at least an 80386, allows editing of stereo material with features such as cut, copy and paste, digital gain control, mixing of different channels, treble and bass "tone controls", plus many more features. There is a nifty gadget they call the Gearshift which functions exactly the same as invoking the variable speed feature on a reel to reel tape recorder. An edit history list is compiled as your work that allows you to go back as far as ten edits to either review a previous edit or undo an edit.

Another program bundled with Fast Eddie is called the Catalog, which lets you create and label a large number of boxes on the screen and assign a particular sound file to each box. Clicking on a box will play the associated sound. It might be the way to keep that creative morning jock happy who wants those effects at his or her fingertip and who can never find enough carts to put them all on. There should be a way to combine this feature with a touch screen monitor for finger touch shooting. And speaking of news, why couldn't this concept be used to allow the actualities for a news program to be lined up on the screen and called to the air with the touch of the finger or click of a mouse?

A third software product is called the "SAW", or Software Audio Workshop by Innovative Quality Software in Las

Vegas (702/733-7854). It's also a good companion to the CardD hardware, and like Fast Eddie, requires Windows. It's self described as a "Professional Hard Disk Editing and Multitrack Mixing for Windows" program. Once again quoting from the brochure: "4 simultaneous stereo (8) playback tracks, live automated non-destructive mixing, backup and restore entire editing sessions to audio DAT, realtime preview of all data processing functions, varipitch, nondestructive flanging and delay effects, SMPTE sync and generate capability, MIDI region and play sequence trigger capability", and on and on.

It was easily the editing software which drew the most attention at the NAB. The code for the program was written in 386 32 bit register Assembly Language, and according to IQS, this greatly speeds up the digital processing used in the editing process. The program was largely created by a gentleman who has thousands of hours of razor blade editing behind him, and who therefore should know what is required, and additionally, desired, in an editing program. Based on what I saw (and heard) at the show, he has succeeded.

One aspect of digital editing of which you must be aware is the incredible amount of hard disk space required to store anything of length. As I mentioned above, two track (stereo), music quality audio requires about 10 Mb of disk space per minute of audio, meaning you need over 300 Mb for 30 minutes of stored audio. That doesn't count the storage space required for the

(cont. to page 11)



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(cont'd from page 10)

programs that support the whole shebang. The bottom line here folks, is that you need the largest, fastest hard drive your budget can stand. And to process that data without having to go to lunch while the microprocessor builds a file, you need a fast machine like a 486DX40 for best results. A slower machine will work, but the results will be that the operator will be spending more time than necessary waiting for the machine to finish what ever it is that it's doing. Be aware that a 66 MHz processor like the 486DX66 can be slower than a DX40 because the data buss speed is only 33 Mb. The DX40 is not a doubling processor and therefore it has an actual buss speed of 40 Mb. Talk to a computer supplier you can trust before you make a commitment to purchase one for an application like audio editing. This is especially true if you're not an absolute computer whiz. Better yet talk to the computer supplier and the manufacturer of the software and hardware. I was told, for instance, with the SAW software at least, a 40 Mhz 386 would be faster than a 486 33 Mhz. This flies in the face of the "conventional wisdom" which many computer advertisements promote.

In the next issue I'll share some of the information I gathered about "audio cart eliminators" and "STL path fade eliminators". There are exciting times ahead for broadcasting. I hope you're as excited as I am.

NAB Plans Chicago 'Networking Reception' To Match Broadcast Employers with Potential Employees

The National Association of Broadcasters has added a special networking reception to its broadcast career seminar in Chicago, April 21-22, to help match Midwest TV and radio employers with potential employees.

The networking reception will be held Thursday, April 21 from 6-8 p.m. at Chicago's Embassy Suites Hotel. The reception is sponsored by Electronic Media, a TV and radio weekly trade publication; Tribune Broadcasting CO., a large radio and TV group based in Chicago, IL; and Rep Temps, a tem-

porary firm that hires and places media professionals for radio and TV stations nationwide.

The Chicago career seminar features some of the nation's top broadcast managers and media professionals. It is tailored for college students and aspiring broadcast professionals, and costs \$25 for students and \$50 for others. Tribune, and Rep Temps will be staffing recruitment tables during the reception, and other broadcast outlets plan to set up recruitment suites during the two day seminar, to interview potential production applicants, news talent and sales professionals.

For details about registration, contact NAB at 202-429-5498. On-site registration begins Wednesday, April 20, 1-6 p.m. A seminar schedule is attached.

The NAB Employment Clearing house (202-429-5497) is a job locator service that helps place hundreds of radio and TV professionals each year.



THE LATEST THING IN PROCESSING TECHNOLOGY IS THE CUTTING EDGE UNITY 2000i



List Price \$8500.00

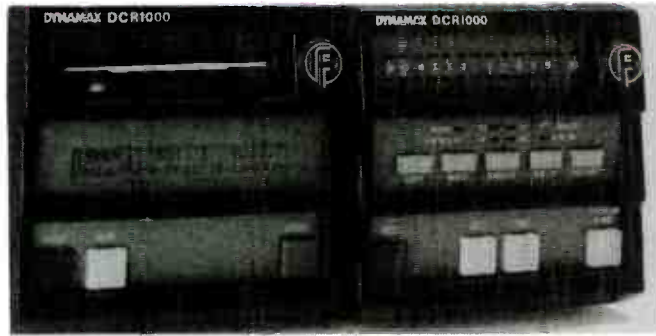
It would have been easy for us to repackage old technologies and stick the word "digital" on the front panel. Instead, with the Unity 2000i, we have created something completely new.

The Unity 2000i is a different kind of processing system. It operates around concepts that are not being used in other processing system. In fact, we have created a whole new realm of possibilities. The Unity 2000i is the first FM processor that can be appreciated by station engineering, programming, and management as a reliable tool to improve a station's sound and increase its ratings.

Here is a processor that combines technical excellence with format flexibility, ease of operation, and bottom-line results. Whatever your processing requirements, the Unity 2000i can achieve them.

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Digital Quality Coupled With Cart Machine Simplicity



Now Even More Versatile With Version 2.0 Firmware

New Year's Special!

FREE Record Module with purchase of 3 players

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

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

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

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

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

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

**Contact Electronic Industries today for more information:
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Testing Of U.S. IBOC DAB Gets Underway In Cleveland

The testing phase of the NRSC/EIA digital audio broadcasting (DAB) system evaluation process began recently with the delivery of seven prototype systems to the DAB Test Facility at NASA Lewis Research facility in Cleveland, Ohio.

The systems will be tested over the next eight months in Cleveland. Four of the systems are inband, on-channel (IBOC) systems that are being evaluated by the National Radio Systems Committee (NRSC) DAB Subcommittee. Three systems are FM IBOC systems, and one system is an AM IBOC system. The FM IBOC systems were developed by Amai/AT&T and USA Digital Radio, which has two FM IBOC systems. USA Digital Radio also developed the AM IBOC system.

The remaining three systems are being evaluated by the Electronic Industries Association (EIA) DAR Subcommittee. One system, from AT&T, is an FM in-band, adjacent channel system. Another is an S-band satellite receiver designed by Jet Propulsion Laboratory for NASA and the Voice of America. The final system is the Eureka 147/DAB system.

[Reprint from NAB Association News]

Mark IV Restructures Mktg. & Engineering

Mark IV Audio has significantly restructured its marketing and engineering efforts. Paul McGuire, president of Electro-Voice, has been named to direct the marketing and sales efforts of Mark IV Audio companies Altec Lansing and University Sound, as well as Gauss loudspeaker products, in both North and South America. He will also continue to direct these efforts in his capacity as president of EV.

David Merrey, president of Altec Lansing, will be responsible for directing research and development functions of Electro-Voice, University Sound and Gauss loudspeaker products. Merrey will also continue to direct these efforts in his capacity as president of Altec.

"These moves signal a very important step toward improving focus and coordination of efforts within Mark IV Audio," said Mark IV president Bob Pabst. "We believe that they will lead to improved utilization of Mark IV Audio's resources and a streamlining of both marketing and engineering policies within the organization." Pabst added that the moves are the culmination of two years of study and customer consultation.

In related news, Electro-Voice has named Jim Long to direct the marketing efforts if its Pro Sound Team in North

America, while Terri Briggs has been named director of marketing services. The Pro Sound team is responsible for EV products intended for the contracting, concert sound and cinema markets.



(Cont'd from pg. 8)

5. Any pre-emption of FCC or FAA rules by the DOT has been removed; 6. Time periods for review of applications and public comment have been shortened.

The only remaining issue upon which the WBA will make comment to the legislature committee is the item which states that the Secretary can refuse issuance of a permit even if the FAA makes a no hazard determination in their aeronautical study of a tower application.

A further positive change in the process will allow towers being added to a group or a tower that is not a hazard to aircraft to be fast-tracked through the process in 30 days. (Information from Richard Wood and WBA's newsletter, WISCONSIN BROADCASTER) Reprinted from SBE Chapter 23 (Madison) Newsletter.



RADIO DESIGN LABS

SPECIALISTS IN PRACTICAL PRECISION ENGINEERING

Comply with the NRSC standards... ...without compromising yours!!

WITH RADIO DESIGN LABS' "NRSC PACKAGES"
...the only thing less is the cost!

- Adapt Present processing to NRSC-1
- NRSC-1 Pre-emphasis AND Filtering
- Available De-emphasis for studio monitoring
- Tight filtering without that annoying audible "ringing"
- Positive overshoot protection
- Asymmetrical modulation
- Fully RF protected inputs and outputs

The Radio Design Labs "NRSC Stick-Ons" are designed to give the AM broadcaster the economical tools to comply with the NRSC-1 emission standards. Designed to integrate with the station's existing monaural processor/limiter equipment, 3 RDL modules (and an ADDED BONUS) are available for your NRSC conversion.

NRSC-PR Connects between your compressor and limiter to provide NRSC pre-emphasis to your transmission system.

NRSC-FL Connects between your limiter output and transmitter audio input to provide POSITIVE control of required "Stopband" emissions.

NRSC-DM Connects between your modulation monitor (or monitor receiver) and your console/studio monitor to give "flat", de-emphasized audio into your monitors, plus with our deemphasis module, you get a tuneable 10 KHz notch filter to remove the "whine" from your monitors (frequently a very annoying problem during nighttime hours.)

The Bonus- "A Guide to NRSC Requirements." A complete bound booklet that takes the mystery out of the requirements. This guide provides a step-by-step explanation of the NRSC guidelines, and the FCC requirements. This is an invaluable manual that no AM station should be without (Available only in NRSC packages "A" and "B" - Not available separately.)

For convenience, these products are available in two packages:

NRSC "A" Compliance Kit - Includes NRSC-PR, NRSC-FL, and the "Guide to NRSC Requirements." This is the ultimate "compliance kit" to fulfill the requirements.

NRSC "B" Compliance Kit - Includes NRSC-PR, NRSC-FL, NRSC-DM and the Guide to NRSC Requirements". This gives you both the equipment for NRSC-1 compliance, plus the demodulator you need for your studio monitors.

For stations already using our NRSC "A" Compliance Kit, or using another manufacturer's NRSC Transmission System, we are making available separately our NRSC-DM, which you need for your studio monitoring... and it is available in mono or stereo!

All this is available in the unbelievable convenient packaging of R.D.L.'s "Stick-On" line! Easy and quick to install. No Rack Space Required. R.D.L.'s NRSC products are the clear low-cost choice for NRSC-1 compliance that sounds good!

NRSC "A" \$399.00

NRSC "B" \$449.00



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Quello Receives Service Award

1994 NAB Distinguished Service Award recipient Jim Quello, longtime FCC commissioner, has a resume that says it all. Quello, who entered the broadcasting industry in the 1930's, quickly rose to GM of Detroit's WJRS after World War II. In subsequent decades, his work was marked by an unwavering dedication to public service. In 1974, he was nominated to serve on the FCC. Though some senators questioned whether a former licensee could perform without bias, Quello prevailed to become the first broadcast commissioner. Two decades later, Quello's record as an effective, impartial regulator put any fears to rest. Recently, Quello served as acting chairman until Reed Hundt was confirmed.

At Monday's Opening, Quello, a "fugitive of the actuarial law of averages," thanked broadcasters for his "pre-posthumous" DSA award. True to his lifelong commitment, Quello commended broadcasters for their public service and urged them not to lose sight of this obligation. Looking to the near future, Quello said the coming information highway should not "obstruct or prevent broadcasters from accessing the public they are licensed to serve."

NAB's Distinguished Service Award recognizes significant and lasting con-

tribution to broadcasting by virtue of singular achievement or continuing service.

FELDMAN, FAMOUS AUDIO AUTHOR, DIES

Noted audio equipment reviewer Leonard Feldman died February 14, succumbing to cancer after a long battle with the illness.

Feldman, 66, was a staple with Audio Magazine for many years, providing no-nonsense subjective and objective analysis of audio equipment. He also was an informal consultant with RW on digital technologies, such as MiniDisk and DCC, and provided radio tuner reviews in 1992 and 1993. His columns also appeared in other trade publications.

He was extensively involved with the Audio Engineering Society (AES) and served on various audio committees during his long career. In the mid 1980s, Feldman was instrumental in convincing Congress that the "copy-code" notch proposed for CDs would audibly affect the audio quality. He also testified on the consumer-based Serial Copy Management System (SCMS) anti-copying systems for digital recorders which became a requirement in 1992.

Feldman is survived by his wife and two children.

CD100 - X Compact Disc Adapter-Amplifier



This dandy little Cost-Cutter is

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plus shipping

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The CD100 impedance matching amplifier was a huge success! The CD100-X improves on this quality even more. We've added larger, sturdier adjustment pots and put them on top of the case for better convenience. The circuitry now includes voltage regulation for better control of the audio output signal. Should the output driver ICs ever fail, you can now replace them easily from any electronic supply house, reducing your down-time waiting for a factory order. Like it's predecessor, the CD100-X was specially designed to interface a consumer type CD player to the input of any audio console. You can also use it with a cassette player or any high impedance output audio device.

SPECIFICATIONS:

Frequency Response: 15Hz to 30KHz within 1/2 Db

Typical Distortion: .06 percent

Noise Level: -66Db below zero level

Cross Talk between Channels: -67Db

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FOR SALE: Two Optimod 8100 at \$2500 each. One Optimod 8000 at \$1000 Contact Paul at KDHL, (507) 334-0061.

FOR SALE: ITC Triple Deck mono playback. In good condition, recently retired from service. \$400. Contact Brad Howard, KOFO Radio (913)242-1220

WANTED: 2-Track playback head for Ampex AG-500. Used ok. Steve Tunwall, KMA, Shenandoah, IA 51601 800-234-5622

WANTED: Used remote telephone sportscaster console (MAX-Z, Telfax, etc.) Call Randy WCSW-WGMO, Shell Lake, WI 54871 (715)468-2123

FOR SALE: Shaffer Automation System Series 7000 1—Cetec 7000 System brain 4—ITC 770 stereo reel-to-reel playback machines 3—Gates ATC playback cart machines 6—Cetec audio files 1—CTR terminal 1—Encoder panel 1—Spare CTR for parts 1—Spare Cetec audio file Rack cabinets to house equipment; spare parts; printer; manuals. Best offer, contact Patrick Berger at WROE (414)725-4447.

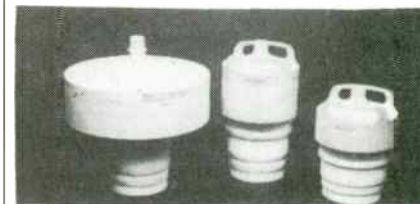
FOR SALE: Country music library on carts, 1,925 A2 Country carts 1970-1992, recorded in stereo, \$3.00 per cart. Contact Patrick Berger at (414)725-4447. *****



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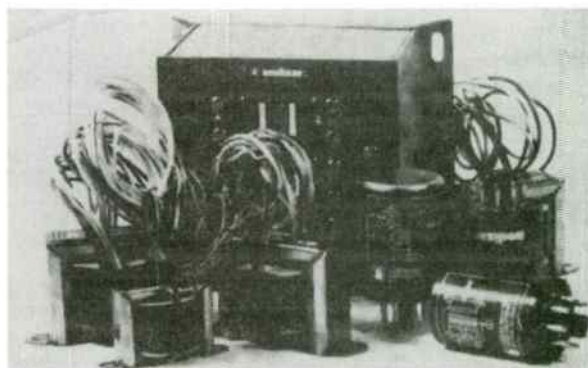
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Audisar Industrial Audio Transformers

Once again those high quality audio transformers needed for broadcast work are available from

The Audisar 9000 Series Audio Transformers provide many unique problem solving solutions for the broadcast and industrial audio user. For example, the 9K-600-6 in many cases will directly replace an expensive distribution amplifier. Highest quality standards are maintained throughout the manufacturing process, with each unit individually hand made to insure reliability and consistency of performance. Every core assembly is varnish impregnated for protection from moisture and corrosion. Both open frame and shielded units are available. Audisar transformers are manufactured in our Bellevue facility from American made materials.

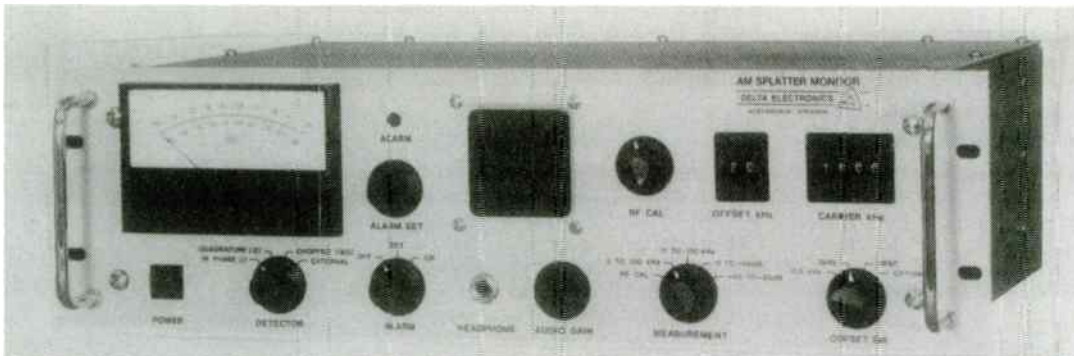


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**NRSC-2 GOES INTO EFFECT AFTER JUNE 30, 1994.
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YOU CAN IF YOU HAVE DELTA'S SM-1
AM SPLATTER MONITOR!**



**Price
\$2,905.00**

Features

- Inexpensive means of verifying FCC compliance
- Easy to operate and interpret measured results
- Measurement of I, Q, I+Q (chopped) and external audio signals
- 450 kHz to 1800 kHz phase-locked operation with 10 kHz to optional 9 kHz channel spacing
- Portable operation from external 12 VDC supply and optional active antenna for near field signal monitoring
- Quadrature modulation measurement enables transmitter adjustments for minimum IPM
- External audio input enables evaluation of audio processor's NRSC filter performance
- Optional peak hold circuit
- Optional spectrum analyzer 300 Hz resolution bandwidth model filter assembly
- Front panel speaker and headphone jack permit audible monitoring of interference
- Adjustable alarm output permits remote control monitoring of interference
- Rear panel I and Q outputs and buffered meter output

The Model SM-1 Splatter Monitor provides AM broadcast engineers with a means of accurately and easily measuring off channel emissions to ensure compliance with the FCC (NRSC-2) emissions standard. Manufactured in response to the recommendations of the National Radio Systems Committee (NRSC) for AM improvement, the instrument provides many of the features of an expensive spectrum analyzer at a significantly reduced price. The Splatter Monitor measures the level of splatter or any other spurious emissions which fall between 11 kHz and 100 kHz away from both sides of the carrier.

The Splatter Monitor provides both fixed and portable operation. While normally installed in an equipment rack and fed with the transmitter or common point RF sample, it also operates in the field from a twelve volt DC source. An optional active antenna then provides the RF sample. This portability is very useful for investigating interference complaints.

Contact Electronic Industries

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