AM Stereo Decision for Magnavox

Washington, DC . . . After hearing conflicting testimony from its various staffs, the FCC at its 8 April meeting, on a 4-2 vote, directed the Broadcast Bureau to resubmit a final recommendation to approve the Magnavox AM stereo system. Commissioners Jones and Brown dissented, and Commissioner Lee was not present (though Chairman Ferris stated afterwards that Lee would have gone along with the majority).

Broadcast Bureau Position

Discussion began with the Broadcast Bureau's Jim Green presenting the staff's recommendation that all five systems under consideration (Kahn, Harris, Motorola, Belar and Magnavox) be, in essence, approved via the mechanism of setting minimum standards that all five systems currently meet. The justification for taking this position was that the Commission would be better off setting standards and then letting the marketplace decide which system was best. It was not made clear whether the marketplace being referred to was the consumer marketplace or the broadcaster's marketplace, but in any case, it was admitted that over some undefined period of time, one, or at most two, systems would predominate.

This admission led Chairman Ferris to question the validity of the marketplace decide versus making some sort of technical determination as to which system was best, and then approving it on its merits. Also, the question of consumers requiring multiple receivers, or a "universal" receiver was broached with conflicting testimony as to the costs of a "universal" receiver to the public. Commissioner Washburn seemed especially concerned by this, particularly in the instance of car radios. His point was that a car radio, by travelling from one marketplace to another might be incapable of AM stereo reception because of stations using different stereo systems. Unfortunately, no one seemed to have solid information as to the costs of a receiver capable of receiving all five systems, as opposed to receiving only one system.

Chairman Ferris also brought up the question of decision by lottery. If, in fact, all the proposed systems were technically equivalent, then why not decide by random selection? On this, the Broadcast Bureau did admit that there were technical differences, but deferred to representatives of the Office of Science and Technology as to the relative technical merits of each system.

The S&T Matrix

A number of personnel representing the Office of Science and Technology made plain their technical viewpoint that the Magnavox system was best. Dr. Powers pointed out that the consumers cannot rationally decide on a technical matter such as this, and that they probably couldn't even detect the differences between systems in any case. He also noted that making the consumer pay for a "universal" receiver was an unfair burden, when he felt that one system was better.

Larry Middletspop, who chaired a joint committee representing the Broadcast Bureau and the Office of Science and Technology on this matter, then proceeded to describe how their Office came up with the Magnavox recommendation. A matrix of eleven-performance factors (such as signal quality, degradation of monaural performance, etc.) was generated, and each of the five proposed systems were scored across the matrix. Weights were then attached to the various performance factors, and an overall score was then derived. Market research professionals would call this a rank order, unidimensional scaling technique which reduces a great deal of complex information to a rather simplistic score. As was pointed out in discussion of this methodology, if the weightings on the various performance factors (continued on page 25)
WKDC Tests Motorola Stereo System

by Kathleen Imbemba

Elmhurst, IL . . . Even as the FCC indulges in a final round of debate concerning the feasibility of AM Stereo, individual stations across the country stand staunch in their defense of one particular AM Stereo system against the claims of its four competitors. Although the industry is unanimous in its approval and support of AM Stereo, opinions as to the superiority of one system as opposed to another flourish and usually clash.

Station WKDC of Elmhurst, Illinois, has been involved in AM Stereo testing for more than three years. Frank Blotter, President of WKDC, has not only tested various systems at his own station, but has also been present at different stations when other AM Stereo systems were tested. The insights that Blotter brings to the AM Stereo discussion constitute a refreshing re-evaluation of the AM Stereo situation, its problems and priorities.

WKDC concluded its first testing of AM Stereo in December, 1976. Blotter reports, "As a result of our 1976 testing, we recorded 'off the air' AM Stereo as transmitted during the day and night with specially built AM Stereo receivers. During daytime experimentation, WKDC told the listeners what was going on, and the telephone response flooded the station. First we fed both channels; then we mentioned that we would remove one channel, giving a one channel feed. We would then restore that channel and remove the other. Using today's standard receivers, those found in the home, listeners told us that they could easily tell the difference, based on the sound, and were able to follow what we had been doing."

Blotter adds that his station demonstrated both day and night mode AM Stereo transmission on standard broadcast equipment at the 1977 NAB Convention. Since that demonstration, WKDC has received both a number of inquiries about AM Stereo as well as visitors who want to know more; the Secretary General of the National Association of Commercial Broadcasters in Japan wrote to WKDC, asking if the station would permit two of their engineers to visit and examine their AM Stereo set-up. Of course, his request was approved, and later, engineers from all over the world—Sweden, Australia, England, South America and the United States—visited the station.

FCC Cooperation

Blotter points out that the FCC has received an incredible amount of data, petitions and reports, from manufacturers, engineers and others who have some interest in the AM Stereo decision. WKDC's President feels that the Commission has been "kind and considerate" to all of these petitioners, and was especially gracious in expediting WKDC's request for on-air testing in the fall of 1976. Blotter contends that the FCC's extensive testing procedures were necessitated by the number of systems now being considered for AM Stereo transmission. WKDC's contribution to the testing effort was important because of the station's Chicago location and the inherent difficulties of producing decent AM Stereo transmission in an area "... whose sky and air is saturated with signals from all frequencies and a multitude of electronic gadgetry."

WKDC and Motorola

Blotter points out that he and Mr. Glenn Webster first built WKDC in 1974, and for years the station was all stereo equipped, with the exception of final audio stages and transmitter, as required by FCC regulations. "Our transmitter is a Sparta (Cetex) 701B, and the frequency response was excellent for AM Stereo. There are 5 entrances in this transmitter through which the Motorola stereo exciter may be injected. After testing various inputs, the simple insertion proved best. Two easy solder points were needed; anyone could do this in 20 seconds. However, one must remember that all other components have to be right."

Apparently, WKDC found Motorola's system more than adequate. Blotter is unconditioned in his support: "If Motorola AM Stereo can work well under the existing conditions in the WKDC area, with our low powered tower directional, it will work anywhere."

More on Testing

WKDC did not stop with that testing, during the past year Blotter, Frank Hilbert, John O'Brien and Charles Marick of Motorola concluded supplementary tests for the FCC reports. Their purpose was to demonstrate the lack of interference problems or loss of signal propagation in transmission of AM Stereo. "Our testing ranged from various signal types up to 100% modulation. Specific program material was tested at frequencies of 4500, 7500, 10,000 and 20,000 Hertz. All signal responses were photographed with a Polaroid-coupled camera to a 5441 Tektronix scope and a 7LS spectrum analyzer. The photographs established that there are no interference problems of AM Stereo transmission." (continued on page 9)
Winn Schwartau on Recording:
Production Recording Techniques

Ossining N.Y. ... Although the majority of production facilities today are built around the several mono and stereo machine formats we outlined in the last issue, not everyone can dedicate all the equipment or space to such a control room. This is especially true for the small 8 track or occasional 16 track studios whose primary business is their local music trade. To redecide a sum of money for a new venture may not yet be feasible for these studios, although clearly, expanding into the production areas is desirable for them at some point. What can the small multitrack studio owner do to overcome these problems, and yet still offer his clients the freedom of using his room for their post-production?

As we mentioned last month, the conventional multitrack recording techniques, and certain production techniques are becoming increasingly similar, and it follows that a similar facility can be used to achieve both products ends. In the typical multitrack recording session, often the rhythm tracks will be laid down, then a few single instrument overdubs, then the voices, etc. until the entire musical picture is painted on a piece of tape either 1 or 2 inches wide. Production work follows the same pattern, painting the final composition by adding one element at a time. In this case though, we paint the production picture by adding a sound effect here, an announcer there; a few seconds of music perhaps, a cross-fade until the entire scenario is finished to the producer's satisfaction.

Production Procedure

In the mono-stereo machine format, when one performs the production task, we will see the various elements of the final product laid up on each individual machine waiting to be cued into the mix at the appropriate time manually by pressing the PLAY button on the machine with the element required. This is done as often as necessary until the timing of the element's insertion is accurate enough to either match a picture, or fit into the required 28sec or 56sec allotted time slot. The advantages in this method of production work are profound, yet this procedure is open to disagreement:
1. Each element is totally separate, on individual reels of tape.
2. Each element may be "shifted in time" with respect to the rest of the mix by playing the machine with that element at the proper time.

(continued on page 6)

UN-CAN IT.

The tape cartridge is a handy little device. Unfortunately the sound quality of programming varies noticeably between "live" and "canned."

dbx has overcome this problem by developing a tape noise reduction system especially for broadcast use. It provides 30 dB noise reduction and 10 dB headroom improvement. This dbx system offers the same benefits as the dbx tape noise reduction system used by recording studios.

The new dbx 148 provides 8 channels of playback (decode) noise reduction in a plug-in modular chassis (space is provided for a spare module). There are two modules available—the 408, for tape playback, and the 409, for playback of noise-free dbx-encoded discs. Typically, the 148 is used in the control room to play back tapes recorded in the production studio with the dbx 142, a 2-channel, switchable (encode/decode) noise reduction unit.

Besides "un-canning" carts, the dbx system extends the useful life of old reel-to-reel machines, quiets audio tracks on VTR's, and even cleans up full-frequency telephone lines and microwave links. Because it prevents noise from coming between you and your listeners—and you and your advertisers—it just may be the most important investment you will ever make.
dbx, Incorporated,
71 Chapel Street,
Newton MA 02195
617-964-3210

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The Audio Process, V.U.
Dear BEE,
Read with interest your article on the V.U. I am interested in your offer of providing a V.U. mount circuit board. Please advise when these will be available.
Henry G. Niederhauser
WCLJE
Akron, OH 44313

BEE Replies:
Thanks for your interest, Henry, we have heard the same from a few other readers. In fact, one reader, Kenneth Rockwell in Old Bethpage, NY, has already built a circuit for our station in the article, and has promised to report on its operation. We will let you know if the board becomes available.

Dear BEE,
I enjoyed Bill Sacks' article on the VU meter very much. However, in the isolation circuit for the meter, he neglected to tell what IC he was using. Please let me know.
Hugh M. McBeath
KJBC
Midland, TX 79701

BEE Replies:
As shown at the very top, center of the figure, you can use a TTO-72 or the MC1458 or 4558 IC in this circuit.

FCC Report
Dear BEE,
On page 5 of the March, 1980, BEE there was mention of two FCC reports on UHF reception, and a new technique called "multi-element depressed collector." I would very much like to receive copies of these reports, if possible.

James A. Allyn
KWWV
Wenatchee, WA 98801

BEE Replies:
We will try if we can get them for you, Jim, as we're not sure they are still available at the FCC.

More on BEE
Dear BEE,
Please delete the following listing from BEE. We have listed _____ for several years with others but have never had any calls. Sold them on the first call and had six other calls. Great!

Jack Vobble
WLEW
Bad Axe, MI 48413

Dear BEE,
Enclosed is my listing for some equipment that I have available for sale. Please run the ads in the next issue of BEE.

For what it's worth, here are my thoughts regarding the "no prices published" policy....

I would much rather see all prices published in the newspaper itself, and NOT in the key-code! It is a hassle to look up prices in the key code, and it is impossible to get a feel for the value of piece of equipment if one has to go through several months of key codes just to get price information.

I also want all BEE readers to see my prices, not just those who get the key code with their issue. Very few readers will respond to an ad if they have no idea (continued on page 11)

Announcing... New From Kahn
The NON-SYMMETRA-MOD
Modulation Enhancement System

This new technique allows you to convert symmetrical audio waves to asymmetrical waves providing full +125% positive peak modulation with excellent quality. Avoids the annoying distortion of conventional devices. And, of course, it is suitable for AM stereo.

NAB See Us At The Sahara Hotel

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839 Stewart Avenue
Garden City, NY 11530
516-222-2221
March FCC Developments

by B. Jay Baraff
Baraff, Keeney & Olender, P.C.

Washington, DC . . . . Once again, the past month has been a busy one for the Commission and the following are some of the highlights.

We would like to again remind you that for those of you attending this year's NAB Convention, we'll be staying at the Las Vegas Hilton. Please make a special point to drop by our suite.

IMPORTANT REMINDER: The annual financial Report (FCC Form 324) was to be filed with the FCC by April 1, 1980. If you have not done so, please contact us immediately.

Public Inspection File

Every broadcast licensee and applicant should be aware that Commission Rule 73.3526 (formerly Rule 1.526) requires that a public inspection file be maintained in the city of license or application. The file must be available for public inspection during normal business hours. For applicants, the file must contain a copy of the application and all documents related thereto, including amendments, correspondence with FCC, supplements, etc. The requirements for licensees are far more comprehensive and include, among other matters, ownership reports, employment reports, renewal applications, program issue lists. Annual financial reports need not and SHOULD NOT be kept in that file. You can request identification from anyone seeking to see the file. If you have any questions as to what should be in your file, please contact us immediately. For applicants, failure to maintain the file can mean a serious issue in a hearing. For licensees, it can mean a substantial monetary fine if not worse.

Distress Sale Assignment

A. The FCC has denied permission for Grayson Enterprises, licensee of Station KLBJ AM/FM, Lubbock, TX, to voluntarily sell those stations as a result of hearing issues designated against the licensee for four other stations on lack of candor, misrepresentation, unauthorized change in studio location, fraudulent billing and program log falsification. Those stations are being sold by distress sale. Thus, until the distress sale applications are approved, or the character issues are favorably resolved, the FCC will not permit voluntary sale of these stations which would generate substantial and unwarranted benefits to the principals.

B. In a similar case, the FCC permitted the assignment of license of WMIL-FM, Lakesha, WI, licensed to Stebbins Communications, Inc., which is also the licensee of Station WMJX(FM) in Miami, which was designated for hearing and subsequently denied renewal for broad-
Elements of Production Recording

(Continued from page 3)

3. Once the mix is done, it’s done. One is mixing straight to mono (stereo), and each attempted pass with all the elements is a mix. These advantages have let the production windows for many years feel they had all that was necessary to turn out their products. But, it is certainly cases, specifically those production efforts which involved some lock-up or sync with film or video tape, other techniques evolved which have seen growing acceptance into the “audio only” production rooms. The actual use of the multitrack storage medium as the single production tool, permitted many additional advantages, and often time savings over the older traditional methods. For example, we are doing the sound track to a audio-visual presentation for the local hospital as a public health education presentation. The program will be ultimately synchronized with a remote-triggerable 16mm film projector, and will be shown both on a still frame and continuous basis.

The various elements to be used would include:

- Several pieces of music, placed throughout the show, many be segue into each other.
- An announcer for the running commentary.
- Several actors: some in conversations, some alone, etc.
- Sound Effects: hospital, sirens, emergency room, background noises, etc.

These effects will run almost continuously throughout the show for added realism.

5. The sync track’s pulse and drive to the slide/motion projector.

A well laid out track sheet can help you produce your show and save valuable time in searching out segments to be rebuilt or mixed.

<table>
<thead>
<tr>
<th>TIME</th>
<th>TRK 1</th>
<th>TRK 2</th>
<th>TRK 3</th>
<th>TRK 4</th>
<th>TRK 5</th>
<th>TRK 6</th>
<th>TRK 7</th>
<th>TRK 8</th>
<th>PICTURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:00</td>
<td>Intro</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>SYNC</td>
<td>Title</td>
</tr>
<tr>
<td>0:00</td>
<td>Music</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Sync</td>
<td>Opening</td>
</tr>
<tr>
<td>0:30</td>
<td>Intro</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Sync</td>
<td>Wide Shots of Hospital Complex</td>
</tr>
<tr>
<td>1:05</td>
<td>Music</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Sync</td>
<td>Ambulance</td>
</tr>
<tr>
<td>1:15</td>
<td>Music</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Sync</td>
<td>Emergency Room Activity</td>
</tr>
<tr>
<td>1:35</td>
<td>Music</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Sync</td>
<td>Doctors Conference Over Day</td>
</tr>
</tbody>
</table>

The Details

The sync track will require only one track of our multitrack, as will the announcer. If we are doing an 8 track production effort, the remaining 6 tracks will work very much in our favor, and in the creative interests of the show. Consider the music programs to be used. At some points we may want to change musical program slowly, other times like background noise of normal street and vehicle activity. This would make a transition, but NOT suddenly, into the background noise of the emergency room, with conversations, children crying, paging announcements, etc. By having several of these elements on separate tracks, the manipulation of them with determining the exact length of the show, we may lay in additional elements on other tracks of the multitrack machine in exactly the right position with respect both to the picture and other audio signals.

The Details

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One might say, well, we can do this show very simply by mixing certain elements together and piece the entire show together by editing. That’s true, yes. But, if we want to obtain a realistic effect, we want to have the sound and picture as locked together as possible. By first laying down the sync track, and

a switch. If we dedicate two channels of our remaining 6 for the music, and provide sufficient overlap between them, we may have a great deal of flexibility in deciding exactly where to perform the cross-fade between segments. In the multi-machine format, one will find oneself locked into a final choice earlier in the game than if one had used a multi-track machine, and decided in the final mix. The sound effects, too, may occupy more than one or two tracks. Having overlapping channels of sound effects creates a more realistic impression when the effects are mixed into and out of each other rather than simply keyed in and out. For example, if (as in our hospital presentation) a patient is seen being wheeled on a stretcher from the ambulance into the emergency room, we would expect to hear a siren, the opening of the doors of the ambulance, the stretcher being removed and rolled on the street, and behind all of this, the respect to the picture is indeed a simple matter.

When we get into longer shows, instead of the radio or TV commercials, we may have several hours of events, voices, etc, to be inserted into the multitrack tape before we are ready to do the final mix. When we insert these pieces we will want to be watching the film and possibly retune their insertion a few times until the best mixture is achieved. The Set-Synching of SFX, voices, etc, into a multitrack tape is becoming a new production tool, and has dramatically increased the power and flexibility of the production engineer in creating a well-produced show.

Keeping Track of Tracks

Perhaps the most difficult thing to do in this method of production is to keep track of “What is where on what track”

(continued on page 13)

Have the Record Companies Cut You Off Their Mailing Lists?

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See you at the NAB!
Bill Sacks on the Audio Process

Capacitor Basics

Arlington, VA ... This month, we are going to look at one of the most neglected sources of poor sonic quality, our old friend the capacitor. Since we're in the real world, and "ideal" capacitors do not exist, we have to look at the electrical equivalent of a capacitor which is quite complex. When one examines capacitors, here are a few factors one must consider:

ESR: Equivalent series resistance: this is the loss resistance of the leads, plates, and their bending to one another. Capacitors designed for use with high ripple currents usually have a low ESR.

IR: Insulation resistance: this is the dielectric leakage, and acts as a shunt resistor across the capacitor. This is most critical in timing circuits. Dielectric absorption (D.A.) is a critical factor in quality audio applications.

In audio circuits the capacitors have often been ignored as a source of transient distortion, and as a source of inductive sonic quality. The worst offenders in this regard are most of the ceramics and electrolytics. In my opinion tantilum oxide is "grungier" sounding than some aluminum oxide. Major factors causing this lack of clarity are the high DA and poor impedance vs. frequency curves.

Which Caps Sound Best?

Noninductively wound film dielectric capacitors have an open, transparent sound. Some good sounding film dielectrics are: polystyrene, polypropylene, paraffine, and polycarbonate. All of these are fairly expensive with the exception of polystyrene, which sounds great but can easily be destroyed by flux cleaning solvents. Polyester film (mylar) is a fairly good sounding and inexpensive alternative to some of the exotic types listed above if the absolute capacitance value is not that important (they drift). The film caps are physically large (except Metalized Polycarbonate, and Metalized Polyester) and maximum capacitance values are limited to about 5 micro F. A piece of wire, of course, still sounds better than all of the above.

What to Do About Electrolytics

Electrolytic capacitors are the only practical method of obtaining large values of capacitance for low impedance circuits. Unfortunately, in many instances they are used incorrectly. They should be properly polarized, low ESR types. They also should be bypassed with capacitors exhibiting high good frequency characteristics. This applies to de-coupling as well as coupling caps. This entire subject was thoroughly treated in "Selection of capacitors for optimum response" by Walter G. Jung, and Richard Marsh, presented as a part series in "Audio" magazine in the February and March 1980 issues. (I also recommend reading a series in those two issues about T.I.M. by Robert Cornell.) I would like to thank Mr. Jung for his assistance in preparing this month's column. I suggest that one read the above mentioned articles and then try it. The audible difference quality capacitors make is astounding.

Corrections, Better Late Than Never

"Do we still need transformers?" by Bill Ashley contains a few errors concerning noise figures (see Dec. '79, BEE, page 2). Figures 1 and 2 mistakenly show the noninverting node of the input tied to ground, not quite a floating circuit! Also, a crucial resistor is missing; the resistor forms a voltage divider with the noninverting input resistor. It should equal the value of the feedback resistor, and connect from the op-amp noninverting input (pin 3) to ground, as shown in figure 4. Please note that these circuits were shown for illustrative purposes only, and are not intended as build-it projects. We will have "build-it projects" in future issues of BEE. One final note, (continued on page 9)
WKDC Tests

(continued from page 2)
Blotter becomes quite enthusiastic at this point, stating, "The frequency response was fantastic and dispels the old engineering belief that AM Stereo will not sound as good as that other service. Stations properly equipped and engineered will be equal to any FM station anywhere."

Before he commits himself entirely as a Motorola standard-bearer, Mr. Blotter cites the results of yet another test conducted during 1979. "A considerably updated Motorola stereo exciter from the original 1976 model at WKDC was tested at clear channel 50,000 watt WGN, Chicago, with AM Stereo receivers in Iowa, Michigan and Minnesota. The results of this test confirmed our earlier findings at WKDC, three years before."

This final test, conducted by WGN, Chicago, seems to have won WKDC's support for Motorola. Frank Blotter, however, is careful not to allow partisan interests to deflect attention from what he believes to be the larger and more important issue: the shot in the arm that AM Stereo will provide for an ailing industry segment.

"The quality of AM Stereo is surprising, and will be a gigantic help to the AM business. When it is authorized, stations will not even have to advertise that much, for the automobile dealers will do it for the station, trying, of course, to sell as many car receivers as possible. One manufacturer is scheduled to start production of AM Stereo receivers as soon as the FCC decision is made. The same, I'm sure, holds true for the manufacturers of home sets and the dealers with the new AM Stereo receivers on their shelves. If a station does not go stereo when authorization is granted, it may be pretty embarrassing when the listeners ask, 'Are you AM Stereo?'

Again, Blotter sidesteps personal preference, repeating, "I don't have any interest in any brand supplier, and cannot benefit financially from this, but AM Stereo will be great for stations everywhere. I'm just satisfied that I could give something back to the industry that has supported me for the past 45 years."

Cleaning Kit from TEXWipe

Hilldale, N.J. . . . Broadcast maintenance engineers are all too familiar with the difficult task of maintaining clean tape heads. Although many engineers use cotton swabs or pencils wrapped with cloth tips, the effect is often inadequate and sometimes damaging to the equipment. As usual, one of the most basic and simplest tasks has, for some time, been largely forgotten by equipment manufacturers.

No more. The Texwipe Co. has just come out with a new cleaning kit, custom designed for audio heads. Officially designated as Audio Tape Head Cleaning Kit, TX250, this handy little package contains everything needed to keep tape heads in peak working order, ensuring peak sound fidelity and a low failure rate. Priced well at $27.50, the kit contains enough material for more than 900 cleanings.

The TX250 Kit contains two specially designed Audio Cleaning Pens, one for pressure rollers and one for heads. Each pen holds an adjustable, lint-free, absorbent Clean-Wick which can be cut to the exact shape needed to perform its special cleaning task.

Some of the other special components of the kit include a custom-blended electronic grade Audio Tape Head Cleaning solvent, ten replacement Clean-Wicks, a Clean-Wick Cutter for shaping the pen tips, a machine-tooled open-front cartridge shell Pressure Roller to elevate the rollers into an easy-cleaning position, and a Space-Saver Rack to keep cleaning materials handy.

Not only do the TX250 Kit materials clean equipment, they will also clean oxides, dust, airborne contaminants, lubricant residue and oil from fingertips. For a variety of uses and a professional result, consider the Texwipe Kit. It looks like one of the best things to come along in a small package in quite some time.
Radio-A Unique Medium

New York, NY . . . Radio is not a "primary" medium. It is, instead, "fragmented," "invisible," "expensive," and "ineffective." Television, on the other hand, is "powerful," "persuasive," and "flexible."

This analysis only hints at the scope of the current advertising campaign recently launched against radio by the Television Bureau of Advertising, an effort which virtually assails the would-be advertiser with dire warnings: "...we extend a word of caution . . . look out.

The low out of pocket cost of a typical radio spot may not be low at all if you know the audience you reach, and the "low cost" radio spot can be very expensive if it doesn't produce results."

Radio broadcasters can only, in turn, issue their own warnings to those unquestioning believers in America's "primary medium": when it comes down to sales effectiveness, the biggest medium may not be the best. It may very well be true that people are listening generally less than before. However, it is also true that it is not reaching a large audience that determines marketing effectiveness, but rather, reaching the right audience.

Television no longer commands a universal audience. The viewing audience today has grown immeasurably sophisticated and critically aware. Commercial programming has, for some time now, been under attack for the low quality of its presentations and its limited appeal. The heavy T.V. viewer is profiled as working class, poorly educated, and at the lower end of the economic scale. He or she spends more time in the home, or, if employed, depends on T.V. as the main leisure activity.

The radio listener, on the other hand, spends much of his or her time on the go, professionally and personally. Both work and play demand a dynamic lifestyle; higher wage scales permit a variety of recreational options and leisure activities. Men and women engaged in kinetic and well-defined life patterns watch stations, channels, programs, and they select a medium that travels with them—radio. Radio then, inherently provides a programming option that many viewers are now demanding of television—market segmentation.

No longer can the T.V. advertiser be assured that the audience he reaches is an audience that will be interested in his product. The effectiveness of T.V. advertising actually decreases during the second and third quarters of the year, times when the bland program offerings become the most unpalatable, consisting, as they do, of stale reruns and tasteless pilots. Radio, instead, remains vital throughout the year, catering to a discriminating, four-season audience.

Radio is less expensive, more flexible and, most importantly, adaptable. If handled gently this under-estimated medium may soon outdistance its large and unwieldy competitor. Radio is, after all, red hot.

---

UNIVERSAL BALANCED AUDIO AMPLIFIER MODULE

high slew rate, no transformer, ultra low transient distortion
I.M. distortion a mere 0.018%

The UA-1 balanced building block allows one card to be used throughout the audio chain. Cuts your card inventory, speeds revamping and upgrading audio facilities. A combination line amp, distribution amp, phon0 preamp, mic preamp, tape head preamp, filter sound preamp, and independently usable input/output stages for radio and TV stations, recording studios and professional sound systems. Optional RIAA network available on board. On and off board gain control. Unbalanced break point with current pump output between the input and output stages. The plated-through double sided pc card with RF ground plane construction and heavy gold plating on the edge connector fits most standard audio card cages. Up to 16 cords in a 19 inch rack. Fully balanced input, eight isolated 600 ohm balanced distribution amp output, and a balanced current pump output. All on a single card.

Unit price $210.00
(cash with order—15 day money back guarantee)

STRAIGHT WIRE™ AUDIO, INC.
2523 Wilson Blvd, Arlington, Virginia 22201 (703) 920-2229

---

ATTENTION FM BROADCASTERS

Bring Out The Natural Color
With The EXR EX2 Psychoacoustic Audio Processor

(Especially suited for use with FM Optimid)

The original concept behind the EXR EXCIT3R (not to be confused with an RF EXCIT3R for your transmitter) was to build an audio processing device which would make tape recorded material sound like it was a direct to disc recording. Electronic measuring equipment proved useless in the testing of the system so the first unit was designed and refined totally by ear. Only after thousands of hours of listening and research was it understood how and why the unit worked.

This understanding plus hundreds of hours of studio application led to the present model, the EX2, with its four enhancement settings.

The EXR EXCIT3R restores natural presence, clarity, fullness and individual instrument definition lost in the reproduction and transmission process. It adds to the apparent signal strength without noticeably triggering limiters or compressors, and its S/N ratio of better than 90dB makes it welcome in any audio application. Since there are no multiplier effects or phase problems introduced to the broadcast chain, the EXR EXCIT3R is totally compatible with previously enhanced program material.

LIST PRICE $1690.

15 day money back trial with prepayment

Call or write for full details on this and other sophisticated audio devices. We also stock DBX Noise Reduction Systems and pride ourselves in the technical support we offer the quality minded broadcaster.

BROADCAST INTERNATIONAL, INC.
1229 N.E. 37th St.
Ft. Lauderdale, Florida 33334
(305) 564-4422 Cable: BROADCAST
Se Habla Español

Circle 117 on Action gram.
Clint Free on VTRs:

What About the Control Track?

Knoxville, TN ... A good friend asked me why the control track signal is distorted in playback while in record it is a sine wave. He also asked me to explain the R & X circuits in RF playback amplifiers. The control track question is easier and I'll study R & X.

In record an AC signal derived from the headwheel or tonewheel is recorded by an unbiased low frequency transducer on the bottom 1/16th inch of tape. Recording any AC signal without bias produces a highly distorted recording. Consider the following: When the AC signal is positive, the magnetic particles on the tape are aligned in a horizontal direction with all North and South poles in parallel. When the AC signal is negative, this alignment is reversed.

When the AC signal passes through zero, or has low energy, the particles have a less absolute alignment. In playback it is always the changing alignment of magnetic particles that produce signal current in the transducer.

In order to have a control track signal which is suitable for controlling capstan phase, it is necessary to have a tuned amplifier which is phased by the incoming control track playback signal.

After my explanation, my friend looked at me blankly and asked, "But why is the control track signal distorted?" "It has no bias," I begged. "I know that," he said, "but why is that; why does it have no bias?" "Oh," I said, "you want to know why the control track signal is distorted; hmm, where is that R & X circuit?"

Readers’ Forum

As for why the prices are listed on the Key Code list instead of in the paper. The main reason for this is that our foreign readers (and we have a lot of them) are misled by US asking prices. They have to consider the exporter's margin, shipping, etc. Our foreign distributors are unable to operate with openly published asking prices that they cannot deliver to us. We are sorry it's a hassle, but it makes the situation fairer for our foreign readers.

THE SUPER MODULATION AUDIO PROCESSING GROUP

- THE INSTA-PEAK II - THE LEVEL GUARD - THE WIDE BAND LIMITER -

Insta-Peak II - AM-FM-TV
- Slight Spectrum Optical Control
- Keyed Integrator - Low Distortion Limiter
- Peak Censing Control Circuit
- AM and FM response Shaping

Wideband Composite Limiter - Model WBL
- Stops all stereo filter and pre-emphasis wave-form over-shoot
- Increased FM modulation depth and 1% over any other system
- Phase coherent wide band for composite stereo
- WBL-M for mono to stop pre-emphasis overshoot

Level Guard Mod. AGC
- AGC for AM-FM TV recording
- Optical gain servo for inadequate control
- Optical control by modulation flasher
- Meets FCC AFS rules

Good audio processing does not have to be expensive and complicated. ESP products are value engineered, have operational simplicity and are maintenance free. Prices start at $495 for the WBL-1, the original wide band composite limiter. The "Level Guard" $545, the "Insta-Peak II" $575. Add second unit for stereo applications.

ELCOM
SPECIALTY PRODUCTS, INC.
2810 REDDING AVE., #8
SACRAMENTO, CA 95820
(916) 453-0850 • CABLE "ELCOM"

Circle 150 on Actiongram.
March FCC (continued from page 3) channels, if a Class A channel is not allowed, to add two new classes of stations—Class E-1 with maximum facilities of 20 kw antenna height, 92 meters above average terrain, and Class C-1, with maximum facilities of 100 kw, 305 meters antenna height; to permit Class B (B-1) facilities in Zone 2 to require that all existing Class B and C stations meet certain operating minimums for power and antenna height or be subject to reclassification to a lower class channel; to adopt a new separation cable to reflect the updated propagation curbs. If you are interested in filing comments, they are due June 13.

(continued on page 23)
Production Recording

(continued from page 6)

and when? When hundreds of voices and elements are combined into 8 (or more) channels, in various planned cross-fades, jumps, or what have you, even the most sober-minded engineer can become befuddled. One possible solution to this is another take-off from the multitrack recording industry, but with its own set of refinements: the track sheet. In a fairly typical 24 channel record session, usually, each channel has one instrument on it for the length of the song, and that’s its own simple chart of Track # and Instrument is all that’s necessary. In our example, though, one track may contain 15, 20 or more pieces, constantly changing throughout the piece. A modified track sheet, describing in detail would be of great benefit.

A simple way to do this is to break the show into several time slots, each of approximately 30 seconds, (any will do, depending on how often things change) and put on one column of the track sheet the time listings. If one special time or more is critical, and not on the half-minute, be sure to add it too, especially if many elements change there. The next set of columns would be the individual tracks, containing the various narratives, ie: announcer, doctor’s talking, sirens, etc. Two points can be made here that will be invaluable to the production engineer involved in many of these projects: on each entry to the Track sheet that is made while the elements are being added into the tape, have a listing indicating, either on the entry itself or on a separate sheet, the source of the element. If the SFX come from the BBC record library, then list the Dis. #, track, etc., so one can always go back to it instantly. Music libraries should be referenced as well, as should any original recording done in one’s facility or from outside tapes.

The last column of one’s track sheet only applies if one is doing anything to picture. Indicate what is happening on the film in this column. It results in an easier reference for finding places in the tape and film for mid-show cueing. If the film has a frame counter on it, that will, of course, work fine.

There are many ways in which to do a complex audiovisual show, and this is only one way. But for the small studio owner who wants to get involved in some aspect of the production industry, we have, hopefully, demonstrated that it is possible to do this with some aspect of the production industry, La Jolla, CA. . . . In order to meet the extensive demands of its Mexican and Latin American clients, Broadcast Equipment Exchange has affiliated itself with International Equipment Representatives, Inc., a new and flourishing export management company headed by Luis Carrillo, ex-CEO of radio stations XT-RA-AM, XEROX, and Chairman of the Board of Five companies in Mexico, claims that one of the main advantages of his company will have over its competitors is that the I.E.R. sales staff will visit all stations and recording studios of his existing music facility quite sufficient for the job, and often even more desirable than the mono-stereo format.

Last month I received a couple of letters from some suburban NY students who were interested in getting into the music field. They had little experience, just the home stuff, and wondered if production engineering might be a way to get started. I spoke to a few studio owners, who go through the “No-Experience-No-Job Catch 22” of our industry and they had some insights which may prove valuable to those newcomers to the field. Until next month... the Republic of Mexico at least ten times a year.

In the past, manufacturer have been faced with several problems when trying to deal with the Latin American market: cultural and language differences, credit and/or collections. Since I.E.R. is an American corporation, its home office in California, many of these problems can now be circumvented. I.E.R. will work with the manufacturers to review their marketing plan for Latin America, and then recommend the necessary adjustments to ensure increased productivity. I.E.R. will also collaborate with their representatives to prepare the necessary literature in Spanish and distribute it to the consumer in the most effective way. At NAB/Las Vegas, bilingual engineers representing I.E.R. will visit and translate for Latin American visitors at the manufacturers’ separate booths.

BEE enters into this new relationship with confidence and high expectations. I.E.R. should provide a valuable service to manufacturers and clients within this country and in Latin America. Welcome aboard, I.E.R.

Le solucionamos sus problemas de adquisición de equipo usado.

I.E.R. tiene la representación exclusiva de Broadcast Equipment Exchange para proporcionar acceso inmediato al mercado de equipo usado.

Si necesita equipo usado a precios razonables para su estación, nuestro personal bilingüe le proporcionará directamente toda la información del equipo que se anuncia en esta publicación.

Ahorre tiempo y dinero, póngase en contacto con nosotros por que tenemos la solución a sus problemas.

TELEFONOS:
I.E.R. (714) 459-3061
I.E.R. (714) 599-2025
TELEX: 181156

O ESCRIBANOS A:
I.E.R.
1300 Prospect, Suite 510
La Jolla, Ca. 92037

International Equipment Representatives

Circle 115 on Action gram.
International Contact Section

For more information on any product listed in BEE contact the following companies. Important for those radiofuadores of México, suscripcion a este periodo esta pagada por I.E.R.

In Canada:
United Video Ltd
1485 Trirole Street
Ontario, Ontario K1B 3S
Canada
613-741-5554

In Mexico:
En Mexico:
I.E.R.
PO Box 1142
La Jolla CA 92038
Tel: 714-345-3691
Telex: 181756

In Other Countries:
Broadcast Equipment Exchange
Tel: 703-525-0400
TELEX: IMASINC 64593
Cable: IMASINC LONDON VA

Non-Profit, tax-exempt Christian Corp.
building radio station from ground up. Needs used equipment. Best price or tax-deductible donation basis. Key Code 3-31.

Audio jack panels, rack mount. Key Code 3-32.

Audio Technica AT-706 electrostatic headphones, never used. Key Code 2-8.

Stand Sound 262 reverb unit, new. Key Code 2-18.

Altec Lansing rotary attenuators, 600 ohm in and out. New. Used in factory carlots. RP standard, 8-9G. RA series, 3-game, single gang. Key Code 2-65A.


DBX 216-28 channels of noise reduction, with custom 5 strip patch bay and cables. Key Code 2-19A.

Urei 813 speaker systems, like new. Key Code 2-25.


Gates model SA-40, includes table and all accessories, works well. Key Code 2-61.


DBX decline noise reduction units, 8 ch. total automatic switching. rack mounted, almost new. Key Code 2-36.

MRR, miniaturizes custom in & out switches & stereo switching, patches, 4 pair avails w/separate rack power supply. Key Code 2-72.

Doly 301, Dobly 360. Key Code 2-54.

atie Audio Analyzers, IE-30s and ID-10s in stock. Triad Production Inc., 1910 Ingersoll, Des Moines IA 50309. 515-243-2125.

Want To Buy

Orban Optimod model 8000-A. Key Code 4-55.

Inovonics 355 or similar electronics for older (350) Ampex 2 ch. Key Code 3-22.

AKG BX-18 or BX-60 working or non-working. Key Code 3-8.


AUTOMATION EQUIP.

Want To Sell

Gates time pulse generator & silence sense. Key Code 4-71.


Gates RA-1 random access unit with interface and cables, gd cond, presently in use. Key Code 4-40A.

McCarra Automation system, 5 carousels & programmer, on line now and in gd cond. Will deliver on site, install and train buyer’s staff anywhere in continental U.S. Key Code 4-32H.

SMC 250 RS carousel, just needs tender loving care and Gates carousel service unit. Key Code 4-71.


Broadcast Products System with SMC RS, carousels, complete except for reel to reel decks, removed from service 11/180, all manuals included. Key Code 4-73.

ATC 55 deck parts, gd worn gears, motors, elevator platform & rack, some parts missing, as is. Key Code 4-71.

Sparta time-annoucer unit w/tape, exc. cond. Key Code 4-32F.

Schroeder 800-T stereo brain, new stepping relay, and power supply, spare parts, runs well. Key Code 4-17.

Cabronick 2 model 761 teleprinters, like new manuals included. Key Code 4-28.

New Listings are in Italic.
**Instructions:** Use this form to take advantage of any of the services provided by Broadcast Equipment Exchange. Always fill in the Contact Section below first, then fill in the appropriate service section(s). Remember, BEE provides a FREE listing service for end-users. Listings are printed without the listee's name and address. A Key Code is used instead. Paid subscribers receive their issues of BEE with the matching Key Code list. Non-paid subscribers do not, they pay for the Key Code only when they order it (see the Subscription Section below).

### CONTACT SECTION:

<table>
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### KEY CODE ORDER SECTION:

**TOLL FREE KEY CODE HOTLINE**

800-336-3045

In Virginia call 703-888-0400 collect

Our Hot Line telephone number. When you call, we will give you any Key Code names and addresses and send you the full list with an invoice for $5.

International Readers
See International Contact Section on page 14

### READER INQUIRY SECTION:

If you are interested in receiving literature from any of the advertisers, in this issue of the Broadcast Equipment Exchange, then circle the numbers as shown at the bottom of the ads, and we will be happy to forward your request to the appropriate company.

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### SUBSCRIPTION SECTION:

There are three ways of receiving BEE, so choose the way that suits you best:

1. **FIRST CLASS MAIL WITH KEY CODE LIST.** Avoid delay...get in on the action faster! For $25 per year, you get BEE 1st class WITH the matching Key Code number list. (Enclose your check with your order and get 3 BONUS issues!).

- Bill me $25 for a 1 year, 1st class mail subscription to BEE including the Key Code list.
- Check enclosed for 3 BONUS issues!

2. **THIRD CLASS MAIL WITH KEY CODE LIST.** Save better than 50% by reducing our handling costs! For $12 per year receive BEE via 3rd class mail WITH the KEY CODE list included. (Enclose your check with your order and get 3 BONUS issues!)

- Bill me $12 for 1 year, 3rd class mail subscription to BEE including the Key Code List.
- Check enclosed for 3 BONUS issues!

3. **FREE KEY CODE LIST.** With the equipment listed.

- Free without the Key Code list (I'll buy the list for $5 only when I need it).

### LISTING SECTION:

Broadcast Equipment Exchange provides FREE listings for all broadcast or professional end users. Send in your "Want to Sell" or "Want to Buy" requirements, and we will list them in BEE for three full months. Hundreds of stations and companies have used us successfully. Why don't you? The system is simple, just fill in your listing below, and send this form in by the 15th of the month preceding issue. Don't forget to fill in the contact section above before you mail the form. On each listing please circle either "Want to Sell" (WTS) or "Want to Buy" (WTB), and if possible please note in which category you would like the listing to be run.

<table>
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**IMAS BROADCAST EQUIPMENT EXCHANGE** accepts no responsibility for the condition of the equipment listed.

Classified listings with contact information are available to manufacturers, dealers, brokers, distributors, etc. on a $1.25 per listing basis. Call or write for complete details.

We make no attempt to evaluate equipment, but rather publish exactly what is sent to us by the listers.
**CART MACHINES**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Harris 90-2, stereo</strong></td>
<td>New equipment, used only 50 hours, 1,000 to 1500 Hz tone keys. Key Code 4-23.</td>
</tr>
<tr>
<td><strong>Collins R/P cart decks</strong>, run as is. Key Code 4-204.</td>
<td><strong>Spotmaster 500C mono record-play</strong> (2). Key Code 4-23.</td>
</tr>
<tr>
<td><strong>Spotmaster Ten with two audio switches</strong>, run as is. Key Code 4-23.</td>
<td><strong>ATC-4 playback, record playback, all complete and in working cond. Key Code 3-70A.</strong></td>
</tr>
<tr>
<td><strong>Sparta mono playback cartridge machine</strong>, excel cond. Key Code 4-76E.</td>
<td><strong>Key Code Names</strong></td>
</tr>
<tr>
<td><strong>Tapecaster R.P, gd cond. Key Code 3-70A.</strong></td>
<td><strong>ITC T/P, good cond. (2). Key Code 3-70B.</strong></td>
</tr>
<tr>
<td><strong>Tapecaster s pot, gd cond. by Spotmaster. Key Code 3-70C.</strong></td>
<td><strong>ITP T/P, series delay cartridge recorder, excel cond. Key Code 1-75E.</strong></td>
</tr>
<tr>
<td><strong>Digital-O-PH-3000 stereo, playback, full cuing, in service till 11/30/80, gd cond. Key Code 1-43A.</strong></td>
<td><strong>Spotmaster playback, full cartridge, new.</strong></td>
</tr>
<tr>
<td><strong>Carreras I/2 w/record package, record amp is tube-type, fair but working. Key Code 2-14.</strong></td>
<td><strong>Sparta cartridge, new machines, used for send. For large packages please on trade-in of surplus equipment. Autodyne Box 13036, Orlando FL 32889. 305-855-6688.</strong></td>
</tr>
<tr>
<td><strong>ITP T/P series delay cartridge recorder, excel cond. Key Code 1-75E.</strong></td>
<td><strong>Want to Buy</strong></td>
</tr>
<tr>
<td><strong>Sparta playback. Key Code 3-70D.</strong></td>
<td>Cart machines, retired, junk cond, barely working, etc.</td>
</tr>
<tr>
<td><strong>Spotmaster 5100, no problems, in service.</strong></td>
<td>Sparta, new cartridge machine, used only at special committee meetings. Key Code 4-76B.</td>
</tr>
<tr>
<td><strong>ITP T/P, series delay cartridge recorder, excel cond.</strong></td>
<td><strong>Want to Buy</strong></td>
</tr>
<tr>
<td><strong>Digital-O-PH-3000 stereo, playback, full cuing, in service till 11/30/80, gd cond.</strong></td>
<td><strong>Spotmaster playback, full cartridge, new.</strong></td>
</tr>
</tbody>
</table>

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**CAMERAS**

**Full Compass Systems**

- **Want to Sell**
- **Want to Buy**
- **Cassette & Reel-to-Reel Recorders**
- **Cart Machines**
- **Cassettes & Reel-to-Reel Recorders**
- **Restoration/Repair**
- **BROADCAST EQUIPMENT EXCHANGE**

---

**RCA 25 Hertz tone generator, partly rebuilt. Key Code 4-17.**

**IGM 500 programmer, Scully playbacks (3), Carousels (3), cart playback (4), time announcement, new timers, logjams, encoder & printer. Very reasonable. Key Code 3-23.**

**Gates SC-48 programmer, TP-2 time pulse generator, monitor & control panel. Stack-55 cartridge playback, RA-1 random select unit, time announce, network fader, very reasonable. Key Code 2-9.**

**SMC stereo automation, DP-1 programmer, two loggers w/tape reader, 3-stereo Revox A-77’s. S-5MAG random select cartridges, time announce, single play cart with inputs for additional units, provision for Marty Remote Call in using 4/2 Hz tone, in top cond, in four racks. Key Code 2-67.**

**Sono-Mag model 252 stereo, factory record, slimline case. Key Code 2-80A.**

**Control Design Model CD 28M programmer, Model CD 28A monitor, Model CD 12C electric clock w/outboard battery backup supply, Model CD 28P power supply. Key Code 2-68A.**

**Sono-Mag model 252 stereo. Key Code 2-68F.**

**Automated Broadcast Controls, time announcer control. Key Code 2-69H.**

**Carousels, 20A’s (2), 22A (1). “Ilot machine”, gd cond. Key Code 2-10A.**

**Scherer 800 stereo brain, SMC carousel, Random Select, network fader, slow speed logger, 5 racks. Key Code 2-66.**

**Sono-Mag model 250 monaural. Key Code 2-68C.**

**Automated Broadcast Controls, time announcer control. Key Code 2-69H.**

**Carousels, 20A’s (2), 22A (1). “Ilot machine”, gd cond. Key Code 2-10A.**

**Scherer 800 stereo brain, SMC carousel, Random Select, network fader, slow speed logger, 5 racks. Key Code 2-66.**

**Sono-Mag model 250 monaural, factory record. Key Code 2-68C.**

**Scherer 903 w/last few factory updates, including 2800 & 2900 function codes, 4 Ampex reel-to-reel decks, 2 AudioFiles, 1 Carousel, and more. Key Code 1-69A.**

**Want to Buy**

**IGM RAM controller or similar automation brain. Key Code 4-61.**

**Harris LED terminal for System 90 automation. Key Code 4-72.**

**Schaller 800 brain. Key Code 3-20.**

**20Hz tone detectors. Key Code 3-20.**

**20Hz tone generator. Key Code 3-20.**

**IGM Time Announcer 382 or SMC Time Announcer 581 in working cond. Key Code 2-11 T/C.**

**ITC 750 or Otari ARS-1000. Key Code 2-42.**

**CAMERAS (VIDEO)**

**Want to Sell**

- **Hitachi FP 1500 with CCU and 50’ of cable (2).**
- **TCK 630’s, w/101 Schneider lenses, ITE Pan heads, 200’ camera cable per camera, tri-axis. Two avails. Key Code 4-25A.**
- **RCA field chains (3).**
- **RCA TV-14, cable, zoom lens. Key Code 4-55.**
- **RCA TV-14A, 21” vidicon B&W w/3 electronic viewfinder, pan & tilt head, 4.1 zoom & 10’ mini cable, very gd cond. Key Code 3-55.**
- **TV25N B&W camera cable, 2 large reels. Key Code 3-52.**

**In Canada called United Video**

615-741-5554

**In the U.S. call 800-336-5085**

For any Camera Name Addresses and Names. **In Mexico call ISR** 714-459-3991
P- Telex Model 235/300 Modtronics, recently rebuilt. Ampex (stereo) to stereo cassette otherwise mint stereo, low $1800. for specs.

5. cond.

5M64 2 trk recorders in cassette, excel. cond. key Code 2-25.

Ampex 350 stereo 27, conditioned, $1095. Autodyne, Box 13036, Orlando FL 32859. 305-855-6868.

Ampex 350-125, 2 stereo, 7 1/4" reel, rebuilt like new, $2250. Autodyne, Box 13036, Orlando FL 32859. 305-855-6868.


Ampex 351 mono, reconditioned, $1095. Autodyne, Box 13036, Orlando FL 32859. 305-855-6868.

Scully 280 FT mono in cassette, w/automatic lifts. Like new, $1895. Autodyne, Box 13036, Orlando FL 32859. 305-855-6868.

9 track (8 heads), for 3M M79, gd cond. Key Code 2-25.

Tascam 40-4, new, perfect shape, heads, motors, etc, Key Code 2-52.

Ampex 370 stereo, 7"x7" reel, like new, $1950. Autodyne, Box 13036, Orlando FL 32859. 305-855-6868.

Ampex 600, rack mount only, good cond. Key Code 2-41M.


Ampex 600, tube type, (2) in 1 case, with 19" rack mount. Key Code 3-3A.

Tascam 702-703A series 70, 7"x7", 1 trk audio tape recorder. Key Code 3-15A.

Ampex 440C-2 tape recorder, 30 hrs, in portable cases, perf cond. Key Code 3-5A.

Ampex 350 full trk mono machine. Key Code 3-15A.

Ampex, Soundcraft, RCA, 1/" tape, 700", 14" reels, (1) new, (1) condition, Key Code 3-300 in 2 cassette, gd cond. Key Code 2-25.

Magnecord MD-1000 duplicator & 1 slv 2 slv stereo will accept 8 slv &/or in equipment rack, exc cond. Key Code 2-25.

Sony TC-850, quarter trk w/2 trk switchable playback head. 15-7/8" closed, closed loop dual capstan servos, transport, 10" reel capstan, front face switch, owners tech manuals. Key Code 2-52C.

SCULLY 280 FT mono cassette, with automatic lifters. Like new, $1895. Autodyne, Box 13036, Orlando FL 32859. 305-855-6868.

3M M64 2 trk recorders in cassette, exc cond. Key Code 2-25.


Pioneer TR-770 rtrk rack mount auto reverse tape machine. 7"x3" quarter trk stereo, w/motor deck, bias & eq switches, mic, line mixing etc, 2 mos. old w/box & manuals. Key Code 2-52C.


Ampex 601-2 recorder/reproducer, 1/4 trk stereo, low hrs, no bldct use, needs belts, otherwise mint cond. in portable case. Key Code 3-65A.

Sanyo SKD 1700 front loading cassette deck, new, heads alignment. Key Code 3-65C.


Ampex 351-2 (needs) electronic work. Key Code 3-54A.

Otari 5050B-1, 8" 8 track full size recorder, very little use, sel-sync, remote capability. Key Code 3-36.

Ampex AG-440B in cassette, 2 trk & full trk, gd cond. Key Code 3-41F.

Crown reel to reel rec/pb, 700 SS, w/20 watt amp & carrying case, super cond. Key Code 3-45.


Telex Model 235/300 Mod to reel to reel master (stereo) to stereo cassette slave three position copy. Master play speed of up to 30 sps on reel master. Key Code 3-7A.

Magnecord, recording transport model 1022, 1/4 trk, stereo, gd cond. Key Code 3-43B.
CONSOLES...WTS...CONTD.

Gates 8-channel solid-state mixer, Pro-124 cond. Key Code 2-12.
Speck SPV800-C, 16 in, 8 out, 16 direct outputs, parametric eq. 3-cue, echo sends plus, 4 pro levels. New Key Code 2-18.
Ampex MX-10, portable prof. mixers (2), mint cond. w/manuals. Key Code 2-52A.
Tascam model 10, 10 in, 4 out, talkback, slate, headroom, mixer panel, amp, meter. bridge & power supply. 101 low imp. mic inputs. complete. Key Code 2-52B.
Melcor pre amp equalizers, H.W. faders. available as system or parts. Key Code 2-52C.
Harris stereo 80 power supply, excel. cond. Key Code 3-4.
Stevenson Interface Series 100, Board. 16 input frame, 9 in. 4 out w/compression mod. A. Papa, 213-788-6404 or 213-399-9069 at D. Anastasio, 609-424-2522 or 215-546-1908.
Ampex AM-10 Mixer, excel cond. $395. Autodine, Box 1306, Orlando FL 32809. 305-855-8688.

WANTED TO BUY

Pultec 4 ch. line mixer Key Code 4-69.
Stereo 5 ch board, at or near junk cond. Sprar, or similar, any brand for parts. Key Code 4-41.
Stereo broadcast consoles, one or more w. 4 or inputs, one with 5 or more, all with stereo, or mono. Key Code 4-42.
Stereo console, 5 or 6 channel, in gd cond. Key Code 3-4.
Stereo console in working cond. for new, FM Key Code 3-2.
Altec 230B. Key Code 3-21.
Collins 212B. Key Code 3-22.
Audio control, 10 input, or more, any stereo, some make, tube or note. Key Code 2-5.
Audio console, 8 ch or more, mono/stereo. Key Code 3-2.
Stereo console, 5-8 channel. Key Code 2-32.
Console mono, at least 8 inputs in gd working order. Key Code 2-7.
Broadcast Electronics 150359 vertical fader, 10 mixer dual ch. Key Code 2-63.

DISCO & SOUND EQUIP.

WANTED TO SELL

Eventide instant phaser. Key Code 4-72B.
Eventide omni-pressor, excel cond. Key Code 4-72D.
JBL 4341 monitor speaker system, 4-way, walnut cabinet, (pair). Key Code 4-74C.
Quad Eight RE-10 variable decay reverberation unit. Key Code 4-72A.
Sensory System-custom built studio monitor speakers, 2-way system w/all Altec components. Selling active speaker cabinet. selling as pair only. Key Code 3-65C.
Tascam 5 & 10 consoles, 8 trax and Ampex 2-trax, microphones, noise reduction system, limiters, compressors, everything. Key Code 3-35A.
Malcro & Scully recorders, 16 in 16 out console, complete recording studio, & all related equipment. Key Code 3-41H.

EMPLOYMENT CLASSIFIED

DISCO & SOUND EQUIP.

WANTED TO SELL

I am seeking a radio position in Spanish radio stations in Chicago, Los Angeles, San Francisco, New York, Miami, or any place with Spanish population in the United States. Have 3 years of radio experience. Resume and tape later. Send replies to Frankie Rodriquez, Box 1361, Ybor, FL 33608.

Experienced educational announcer looking for break at AOR or progressive station. College graduate, would prefer New England area. Will send resume and tape. ICU Grandmont, 111 St. Clair, Taunton MA 02180, 617-922-4813.

Current Chief Engineer wishes to work with Christian radio. Must be ministry oriented. Degree. Also several years on-air. John Hurst, Box 283, Homosassa, FL 32640, 904-628-6768.

HELP WANTED

Maintenance Engineer: Background in TV transmission series race maintenance desired. Station located in the heart of Wisconsin vacationland. Submit resume and salary requirements to Chief Engineer Ned Westman, WAEC-TV, P.O. Box 818, Rhinelander, W15450. An Equal Opportunity Employer. (715) 497-4491.

For listings with Box numbers, reply to Box 1228, c/o BEE, PO Box 1238, Arlington VA 22210

LIMITERS

Want To Sell

Urei LA-3A, excel cond. Key Code 4-75C.
Urei LA-3A audio levelers (4), gd cond. Key Code 4-75C.
Kahn Symetra-peak, cond unknown. Key Code 4-33.
CBS 4110 stereo FM VoluMAX, excel cond. Key Code 4-76C.
Gregg Labs audio active filter network, 525, gd cond. Key Code 4-14.
Spectranonics model 610 Complitters, excel cond. Key Code 4-76D.
Collins mono limiter, works. Key Code 4-65B.
CBS VoluMAX 400, gd operating cond., Key Code 4-64.
CBS VoluMAX 411, excel cond, stereo. Key Code 4-54A.
C.B.S. Laboratories 4400 Audimat & C.B.S. Laboratories 4110 FM VoluMAX, factory checked, tested. Key Code 4-73.
CBS VoluMAX 4110, excel cond. Key Code 4-53.
ITA LA-1B limiting amplifier (2), Key Code 3-53.
Spectra Sonics Complimiter model 610 factory checked to a calibrated spec. Key Code 3-54.
Gregg Labs tri-band limiter and AM peak limiter combo 2424/2612, like new, w/manuel. Key Code 3-4A.
Urei LA-2A limiters, new, Auditecnicos, 652 Eastbrook Rd, St昌 0690, 800-243-2595.
Urei 1176B. Key Code 3-57C.
Universal audio compressor limitar LA-5, Key Code 3-3.
Gates 2924B, tube limiter, w/switch. Key Code 3-65F.
Stromberg-Carson AN-GSA/33 compressor, 4 unit and power supplies in one rack mount, w/switch. Key Code 3-65F.
CBS FM VoluMAX, connected stereo pair. Key Code 3-66A.
Urei BL40 modulator w/polarity controller, manual. 1 yr. old. Key Code 3-51A.
CBS 4450 Audimat AGC unit, stereo. Key Code 3-12.
Shure M-62V Level-Loc limiter. Key Code 3-65C.

LISTENING EQUIP.

WANTED TO BUY


Altec 604’s or 515’s, may be reasonably priced. also blown Altec or JBL hi-frequency drivers, large or small. Key Code 4-49.

Altec 604 series raw speakers, blown. Altec hi-frequency drivers, blown. Key Code 3-34.

Rex Universal, Key Code 3-44.

Gates Dual limiter stereo. Key Code 3-51B.

LIGHTING EQUIP.

Wanted To Sell

G.B.C. LK3 portable light set, 600 watt lights per set (3), w/stands and case (2 sets). Key Code 3-46.

Mole-Richardson, Bardwell-McAllister, 200 watt fresnel spotlights (4), 5000 watt fresnel spotlights (2), 400 watt fresnels, 300” in sections w/pin plugs, 2 large stage plug transformers, converts 220 to 110 volt, used w/above cable. Key Code 12-40.


ADVERTISING EQUIPMENT

Want To Buy


In the U.S. call 800-336-3045 For any Key Codes Names and Addresses.
LIMITERS...WTB...CONTD.

AUDIMAX: stereo model 4450-A. Key Code 4-55.

GaLs-Sta-Level (2) and/or Gates 39-B or equiv peak limiter, any cond or parts. No model, age of equip not important. Level-D type appearance. Key Code 4-41.

CBS mono-Volomas, late model, gd cond. Key Code 3-38.


Urei-BL40 limiter or other brand in gd working order. Key Code 2-7.

MICROPHONES

Want To Sell

Various tube and other microphones. Key Code 4-74.

Synchon, AV-7a's (2), one new, exc cond. One each for parts, w/cables and pp supply. Key Code 4-51.

RCA BK-11B, small new version of 44BX w/att to roll off switch, key gd cond. Key Code 4-1D.


Shure SM-32 "Johnny Carson" mic., needs ribbon. Key Code 4-1A.

Electrovoice RE-11 (2) microphones. Key Code 4-75B.

EV-643 giant shogun, gd electrical cond., windscreen deteriorated, case included. Key Code 4-1B.

Shure (2) SM-61, new, resonable. Key Code 4-31.

Sennheiser cond mikes, Movilia Pixon. Key Code 4-29C.

RCA DX77, used, in gd cond. Key Code 2-64.


Shure SM55, and Shure SM 61, new and nearly new. Key Code 2-64.

Shure SM-54 mikes, gd cond. Key Code 2-75.

EV-1751, nearly new, Key Code 2-64.

Altec 670-B ribbon microphone Key Code 2-8.

RCA BK-1A, used, in gd cond. Key Code 2-64.

Eony Sony-33MP, (8) new, studio electret condenser microphones. Key Code 2-2B.

RCA 77D, giant 20' helium, unmarked, brand new, all new accessories included. Key Code 3-75A.


Collins power supply 408UB (tube type). Key Code 3-72.

Garner 150 (tubke erase), new. $700. Gary Giovannese (313) 233-3002, after 2 pm EST.


Want To Buy


RCA and W.E. early studio mikes, also need stands, cords, parts, etc. Key Code 4-22.

Sennheiser, need 2 each MD241 and 2 each MD441. Key Code 3-8.

Altec 635-B, RCA BK-5, 44, RCA 77DXX, RCA BK-11, or other ribbon in working or repairable cond. Key Code 3-78.

RCA 44 series, cosmetics more important than workability, also looking for vintage desktop recorders, tone plates, and accessories. Key Code 3-80.

AKG414, need 2 in good used cond. Key Code 3-53B.

Electro-Voice V-2 or 3, cosmetics more important than workability. Key Code 3-80.

RCA 77 series ribbon mics, blackened. Key Code 4-36.

RCA Type 77-D (MI-4045-B) and/or RCA Type KB-2C (MI-11001). Key Code 2-477.

Telefunken U47 tube type microphone or Neumann KM47 tube type. Shure 57's. Key Code 4-22.

RCA boom stand type KS-3A (MI-4094-B). Key Code 4-27.

RCA KM3A (MI-1001-A) needed for parts recovery. Key Code 2-47.


Rack cabinets, 19", hold one 8VU panel, gd cond. Key Code 4-2.

Equipment racks, patch panels, patch cords, assorted tape decks, and audio amplifiers. Any reasonable offer. Key Code 3-77A.

RCA 7.5 henry 400A reactor. Key Code 3-72.

GE voltage stabilizer. Key Code 3-53.

Estel Printer, excel. uses ink, impregnated paper. Key Code 3-16B.

RCA switch, new, 20' long, unmarked, brand new, all new accessories included. Key Code 3-75A.


Collins power supply 408UB (tube type). Key Code 3-72.

Garner 150 (tubke erase), new. $700. Gary Giovannese (313) 233-3002, after 2 pm EST.


PAS-6 electronic binoculars, IR for night vision, exc cond. Key Code 2-55E.

Want To Buy

Catalogs on pre-1960 RCA, W.E. and other bdt equt, also microphone stands for pre- 1960 RCA & W.E. Key Code 4-35.

RCA MI-2100 plate current & calibration meter, also TK-11 lens & transistor amp. Key Code 3-41.


RCA bdct catalogs, sales brochures, wanted, or borrow same to copy, both audio & video. Key Code 4-43.


BROADCAST EQUIPMENT EXCHANGE 19

Want To Buy

Stereo mod monitor, working or not, solid state preferred, will pay cash or trade, have lots of misc bdct equt to swap. Key Code 4-70.

Stereo Modulation Monitor, any condition, even junk for experimental purposes, or parts, age unimportant, tube type fine. Key Code 4-44.

EBS encoder/decoder, 2 tone, FCC acceptable, any cond. Key Code 4-41.

TFT 760 EOS, TFT 763 FM monitor, and TFT 724 stereo monitor. Key Code 2-42.

Modulator for 89.3MHz, FM stereo monitor; EBS monitor; EBS encoder/decoder, fine. Key Code 2-32.


Gates AM-80 modulation monitor or other gd brand. Key Code 2-7.

MOVIE PRODUCTION EQUIP.

Want To Sell

Boles V-180 editor. Key Code 4-45.

Eastman VFX video players (2). Key Code 4-45.

Stellavox 5PT mint. Magnasync 902-16mm. Reels 16mm order. Key Code 4-22.

Beauelle 500BS sound cameras (2) with 112 Angenieux 6-80 mm electric zoom, batteries, charger and heavy duty case. Key Code 4-45.

Kodak VP-1 video player. Sanyo 7mm projector, Kodak 200 sound camera (case), Magnon Instadual view. Key Code 3-61.

Mitchell 16mm 1200' magazine. Key Code 3-54.

De Ury sound projector 35mm. Key Code 3-54.

Bolex camera, 8mm. Key Code 3-54.

Magntech series 200 rubber impover. Turner 4L406E06trol motors, 4 Bodine NCH3 sync motors-chassis mounted and wired, 3.5mm sprockets, misc. hardware, 4 complete control panels. Key Code 1-56.

To Sell

Browning tube type receivers (85). All in gd cond. Key Code 4-34.

CRA series 900 transmitter/receiver, 950-960 MHz, solid state, mini cond. Key Code 4-77.

CRA solid state 148-174 MHz, base station transmitter/receiver, compact size. Key Code 2-7.

Motorola Motrac for 160 MHz, or low power, etc. no more as long as meets specs. Key Code 4-16. 

UHF - FM two or five watt handheld transceivers, 450-470 MHz. Easily returnable. Includes Audio Subcarrier Demodulators, power supplies, IS and walkieguide, $1600 each. Complete units. Dave Castellano, 3469 W Benjamin Holt Dr, Ste 507, Stockton, CA 95207, 209-557-1761.

Motorola VHF HT220, all models, need Stimulon or Mini multi units, w/without "PI", need accessories also, cond. no matter. Key Code 4-16.

Motorola H-Band HT-200 portable, old 960 or higher equipment. Key Code 4-12.

Remote & Microwave Equip.

Motorola PBR-15 remote control can be used wire or wireless, exc cond. Key Code 4-75A.


Motorola PCL 30G composite tuned for 950.0 MHz and Scale 950a antennas. Key Code 4-75.

Motorola PCL-404 STL receivers, $450 each. Fully solid state, on 949 MHz, factory reconditioned, as new, Key Code 4-62.

Motorola dish antennas, (2) 10" 950 MHz, Decibel Products model DB-496, make offer. Key Code 4-44.


Microwave System, 2 hops, 2Ghz, complete w/with dishes and other accessories. Minitelex model 3-60.

Motorola PC 404 STL, in exc cond, used 6 mos ago. Key Code 3-5.

Transmitter combiner for STL's. Key Code 3-12.

Receivel splitter for STL's. Key Code 3-12.

Marit STL-8 systems (2), dual ch/stereo, 950 MHz band, exc cond, used 45 mos, in original box, is fieldline. Key Code 3-12.

Motorola PBR-15 remote control w/67kHz & 110kHz micro-wave boards, needs new stepping switch; new switch, non-installed, will be included. Key Code 3-66B.

Raytheon KTR-100, 3 portables transmitters & receivers. 2 transmitters, exc cond, used 45 mos, exc cond, $800 each.

Motorola RPL-1 remote pickup system, fixed and mobile power supply, rack mount receiver/ transmitter unit RPL-1T, exc cond. Key Code 2-48A.

Continental Electa, transmitter (2) remote control units, will operate two units' each, gd cond, Key Code 1-8.

Gates remote control system, type M-5240. Key Code 2-61.

Motorola RRC-11, remote control units for use w/Motorola STL, System needs tubes, $450. C. Coleman, KBAB, Box 5053, Ventura CA 805-645-7403.

Motorola PCL-303 STL transmitter/receiver with remote control tuned to 950 MHz. Key Code 4-77.

Rust Model 10D-B remote system control, 24 ch, worked when removed. Key Code 1-54.

McMahan TGM-3000 FM frequency monitor. Key Code 1-37A.

Motorola Model RDC-10 w/mismatch, Key Code 1-26.

Schaefer 400T transmitter remote control unit, gd cond, w/without Key Code 1-8.

Want To Buy

Motorola Motrac for AM, must be in gd cond. Key Code 3-38.


Motorola or Marit, STL, stereo FM, 150 MHz. Key Code 3-47.

Parabolic antennas, 2' and 4', 1 pair each, with or without feed for 10 GHz. Key Code 2-54.

Remote transmitter, 30-40 watt power, 450 frequency range, condition not important. Key Code 2-28.

STERE GENERATORS

Want To Sell

CCG SA-10G stereo generator, will work with almost any FM exciter, cond yr old. Key Code 4-768.

Wilkinson SGTE stereo gen, exc cond. Key Code 4-75.

Gates M-6146 stereo generator, Key Code 4-68.

Moseley SCA generator, type tube, gd operating cond. Key Code 4-64.

Wilkinson SGTE stereo generator, exc cond. Key Code 4-55A.

Collins 786M-1 stereo generator, exc cond. Key Code 3-66C.


CCA stereo generator SG-1D, gd cond. Key Code 3-49.

Gates FM 250W stereo generator and exciter all working fine. Key Code 1-45.

RCA BTS-1A stereo generator w/manual, $300. C. Coleman, KBAB, Box 5053, Ventura CA 93003, 805-647-0634.

Want To Buy

Gates M-5095 exciter stereo generator, any cond, any compatible unit will do. Key Code 4-47.

Stereo generator w/without FM exciter, 10 watt. Key Code 2-55.

SWITCHES (VIDEO)

Want To Buy

Dynair 12X10C Routing Switchers (2), (2) in 10 out, D. G., 1/4 D.P. Rackmount includes switches and power supplies, IS, fully solid state. $1100 each. Dave Castellano, 3469 W Benjamin Holt Dr, Ste 507, Stockton, CA 95207, 209-557-1761.

Telecom 490 special effects system w/positioner, Key Code 3-52.

3M bridging video switches (2), (10 inputs Key Code 3-52.

1144 prod. switcher, IS chromakey accessory. Key Code 3-32.

Shintron 367 Color edl code switcher w/with Charcoal gen color, sync generator and effects, like new, low hrs, Key Code 1-44.

In the U.S. call 800-336-3045 For any Key Code Names and Addresses.
**Visual Audio, Code 820 Receiver, Code 758**
- **Fine Used?-2500, Key Code M20, Power transformer, -957**
- **Key Code 613, Ste transmitter cond., 1, working, document trade.**
- **Code FM for-20.**
- **Key Code 5053, Eimac tube model 4CX1000k (4), used. Key Code 874.**
- **Turntables and all for sale.**

**Futural Micro-Tech Model 302 2" tone arms (8), will sell at cost, in original shipping containers, brand new. Key Code 2-56.**

**Tubes**
- **Want To Sell: GE-673, new (4), 1969 new (6), sell or swap for car machine.**
- **Key Code 4-24.**
- **Eimac tubes, 4CX1000(2). Key Code 4-75.**
- **RCA 4CX250B, never taken out of original box. Key Code 4-42.**
- **3CX1500AT(7) (2) tubes, one brand new, one about 1/4 used. Key Code 3-48.**
- **6572's (3) and 4-125's (3), cash or will trade for car machines.**
- **Turntable speakers, studio mic stands. 25 Hz gen. Urei stereo graphic EQ, phono pre-amps, 7/8 or bigger code.**
- **Nonn 455 Taper sockets, other items Key Code 3-6.**
- **4-400 transmitting tubes (4), used but serviceable. Key Code 2-8.**
- **Tetronix 564 CRT, new, unused. Key Code 2-35.**
- **Tetronix 440C, new (4). Key Code 1-78.**
- **Tetronix 154-0582-00 replacement CRT for model 602 display scope. New, in factory carton. Key Code 1-72B.**
- **Bosync color picture tube 47000L2, New (5), used (1).**

**Telefunken VF-14 for U48 microphones, Technics AD-701, Key Code 4-74.**

**Tubes OG for old RCA transmitter, Key Code 2-43.**

**Broadcast Equipment Exchange**

**BROADCAST EQUIPMENT EXCHANGE**

**Power transformers, 3280VA, secondaries, 34800/03480 and 2900/02900. 0.72 amp. Key Code 4-8A.**

**Collins 820-E power choke, Electro Rg works 3660-0701/06-14299. Key Code 4-2.**

**Western Electric 10kw transmitter, 50B-2 mod, needs paint, working when stored, with spares including 3X2000 A3 final, 3-400Z drives, manuals, diagrams. Key Code 3-36A.**

**Collins 20V-2, mint cond., 1kw on 1080 kHz, available about April 1, with assorted spares. Key Code 4-29.**

**Collins 20V-2 mod xnlr & rj45 by UTC.**

**Radio Engineering Labs, 5888-DL FM transmitter, 1kw driver plus 100kw amplifier and power supply, gd cond, used as standby. Key Code 4-41.**

**Electro Mod Reactor eCPN 668-0809-010, Rev C, 960V 1500, 400V @ 3ADC, type E14271, for Collins 820-E. Key Code 4-2.**

**Western Electric 500 watt transmitter. Key Code 4-63A.**

**Gates BC 250 GY transmitter, 25W/10 watts tuned to 1200 kHz, excd cond, sold w/manuals, spare tubes, complete set of extension meters. Key Code 4-3.**

**Collins 732-A 1kw re-built FM transmitter, $1600 each lesser exc, 25kw dummy load with the purchase of both, Dave Castellano, Capitol Bldg Exchange, 3469 W Benjamin Holt Dr, Ste 525, 209-920-1976.**

**Single phase plate xfrmr for CCA FM-1200E transmitter, Key Code 4-68.**

**Altec 20T, 1kw transmitter w/3 phase converter, gd cond. Key Code 3-72.**

**RCA BTA 10F transmitter for gd 1kw standby 85kHz, want to trade Key Code 3-44.**

**Raytheon RA-250 Am transmitter, 250 watts complete with manual. Key Code 3-29.**

**Collins 21E, 1hp blower for Am transmitter, never used. Key Code 3-40.**

**Visual DMF-15KB FM transmitter, factory rebuilt w/axial, type accepted to 20kw. Key Code 3-18.**

**Gates TE-3 Solid State FM exciter, excd cond. Key Code 4-32.**

**Gates exciter, type tube, working, documentation, spare tubes. Key Code 2-9.**

**Gates exciter, model M6055 stereo. Key Code 2-61.**

**National NCL-2000 8-10 meter 1kw output amp, exc cond. w/box. Key Code 2-9A.**

**Collins 8200-1 1kw/250W AM, now air as alternate main, tuned 1480, available now, very gd cond. Key Code 2-29.**

**TRANSCO CORP.**

**Fine Used AM & FM Transmitters and Also New Equipment Exclusively represented in the Philippines by:**

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**For any Code Names and Addresses.**

**In Mexico call IER:**

714-459-3691
RCA TR150-100 w/ TR-61 for $140.00
Several RCA high band TR-22’s ranging from $10-15.00
LLO modules for TR-3, 4 & 22 at $75
MATC and CATC modules
Ampex HS-100 slo mo at $16,500
Norelec PC70-3, available with 101 t zoom at $45,000 total
Two RCA hi band TR-4, two TP-6, 16mm projectors

RCA TR-2 two headwheels. Key Code 4-53.
RCA TR-22 factory high band electronic splicer, excellent cond. Key Code 4-50.
IVC VCR 200KN, monochrome, plug-in color conversion avil. gd cond. (2). Key Code 4-38.
Amplex 1200 B, editor, sidetocam editor, spare head. Key Code 4-80.
IVC 600, VTR, colour’ 1’. (2). Key Code 4-45
IVC video head, new. Key Code 3-39B.
GE VTR, b/w, 16’. Model 4 TD182, need work. Key Code 3-45.
Sony 2850 conversion ECS-1 editor, really out and interface (2). Key Code 3-32.
Amplex VRP 7900A like new. Key Code 3-39A.
VO-2600 color video cassette recorder with full electronic editing. Key Code 3-41B.

JVC editing system, b/w, incl.: (2) CR800. (1) RMB3. Key Code 2-17A.

Want To Buy

Remote Truck, JBV Olson aluminum body (Grumman), step van style. includes 3 13,500 lb air conditioners, vehicle has approx. 10,000 miles, originally planned for filmic 3 camera /2-avr-2 system. Circuit breaker power distribution installed, extra aluminum bracing on side walls & rooftop shooting platform, call for more information. Key Code 4-12A.

RCA BW-4 demodulator. Key Code 3-52.
Videocon pan & tilt head, gd cond. Key Code 3-303.

CYP 5048 Time Base Corrector – Recently reconditioned. 5000.00.
CDL VBE 741 Switcher -1 input. chroma key $4000.
Eastman 350 Projectors – Recently removed from terminal ex 52000.
Eastman CT-500 Projectors - optical and mag. sound ex 11,500.
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Xasetell Carlson triple 5 black & white monitor. Key Code 3-322.

Xasetell Carlson triple 5 black & white monitor. Key Code 3-322.

JVC CR8300 1/2 machines (2) and one RMB3V edit controller, gd cond. new heads. Key Code 4-9.
RCA Quad, TR-4, high-band color video tape machine w/electronic splicer & auto guide svs, best reasonable offer. Key Code 4-5.

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Model 1420 vectorscope
Model 1480 waveform monitor
Model 528 waveform monitor
Model 650HR color monitor

Microtime:
Model 2020 or 2100 TBC
Model 2525 w/2100 system

The Exchange The Exchange
March FCC

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Petition to Deny Process

The FCC denied a request for rule-making filed by NAB and NRBA asking that the petition to deny process be revised so as to eliminate petitions that are inconsistent with the requirements of the Communications Act. The FCC felt that if it implemented the suggestions submitted by NAB that this would necessitate an additional round of pleadings and might further delay the entire process. Instead, the licensee can make its own threshold determination as to what issues raised appear to have substance and which are frivolous.

Ascertainment Checklist

The FCC modified its “Other” category on its checklist to insure that all significant elements and institutions in any particular community are contacted by radio and TV renewal applicants. Thus, persons who do not fall within one of the 19 categories now specified in the checklist would have the burden of contacting the local broadcaster so that it can decide whether that group is significant in the community of license. This rule change was brought about by gays and handicaps that they should have specific categories in the checklist.

Minority Ownership Policy

Station WDRK, Greenville, OH, petitioned for rulemaking to require the Commission to maintain a position of neutrality regarding all persons making application to it with no particular benefit given to anyone due to minority status. However, the FCC felt that it was still proper to award merit in a proceeding involving a minority ownership, where such ownership was likely to increase diversity of content.

Comparative Application

The FCC denied an application for a new FM in Hattiesburg, MS, because of the affects of an earlier decision denying the renewal of Station WSVG AM/FM, Greenwood, MS, of which one of the applicants’ principal was a 25% stockholder. The Administrative Law Judge felt that his application was not entitled to comparative consideration because of the serious nature of the issues in that other proceeding.

AM Stereo

(continued from page 1)

were changed, the end result (e. Magnavox having the highest score) might also change. Middlecamp responded that he felt the performance scoring and weights could be justified, but the data was not made available to BEE for further analysis.

The Vote

Commissioner Quello brought the matter to a head by asking for a vote on the matter. The Commissioners then voted 4-2 to direct the Broadcast Bureau to recommend a single system, and present that recommendation to the Commission. It was left unclear as to whether the Broadcast Bureau had to go along with the Science and Technology recommendation of the Magnavox system as the system to recommend. Chairman Ferris, when questioned by BEE, would not clarify this point, but he did leave the impression that the Broadcast Bureau’s recommendation would be approved quickly. Commissioners Brown and Jones, who dissented, said that they would publish statements on the reasoning behind their positions, but those statements were unavailable immediately after the session.

One thing that seemed clear was that the broadcaster’s input from extensive testing (as reported in BEE, etc.), was not of great concern to the Commission. There was no mention made of who tested which systems, and what they felt were the relative merits of each system. The Office of Science and Technology, until it shows otherwise, presumably made its evaluations based on its own analysis, and not the broadcasters. The Broadcast Bureau’s original position, which in essence approved all five systems, would have had the effect of getting all stereo off the ground immediately. By insisting on the approval of a single system, the Commission may be putting those of the proponents who are ultimately rejected in the position of bringing suit in the Court of Appeals, under the Administrative Procedures Act. This, of course, will do nothing but delay the introduction of AM stereo, for perhaps another few years.
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