

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

Broadcast Bureau & Office of Science & Technology at Odds

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 letting 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 market area 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 Broad-

cast 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 Middlecamp, 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 23)

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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.

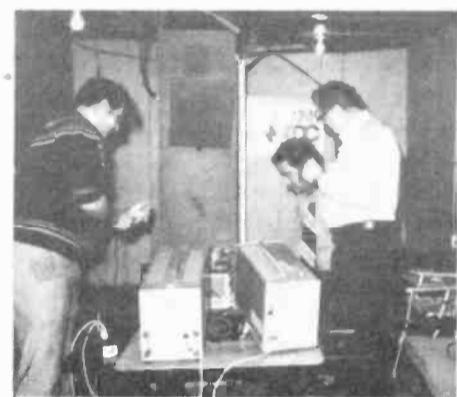
Station WKDC of Elmhurst, Illinois, has been involved in AM Stereo testing for more than three years. Frank Blotter, President of WKDC, has not only tested various systems at his own station, but has also been present at different stations when other AM Stereo systems were tested. The insights that Blotter

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.

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 unconditional in his support: "If Motorola AM Stereo can work well under the existing conditions in the WKDC area, with our low powered 2 tower directional, it will work anywhere."



John O'Brien, Frank Hilbert and Charles Marick at the WKDC transmitter watching response curves during pre-testing.

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."

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 7L5 spectrum analyzer. The photographs established that there are no interference problems of AM Stereo transmission."

(continued on page 9)

WKDC and Motorola

Blotter points out that when he and Mr. Glenn Webster first built WKDC in 1974, 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 (Cetec) 701B, and the frequency response was excellent for AM Stereo. There are

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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 rededicate 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 layed 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 28:sec or 58:sec allotted time slot. The advantages in this method of production work are pro-

found, 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.

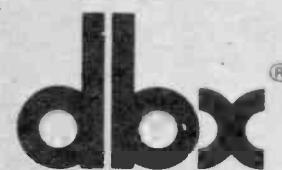
The tape cartridge is a handy little device. Unfortunately the sound quality of programming varies noticeably between "live" and "canned."

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) tape 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,
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Circle 121 on Action-gram

Broadcast Equipment Exchange

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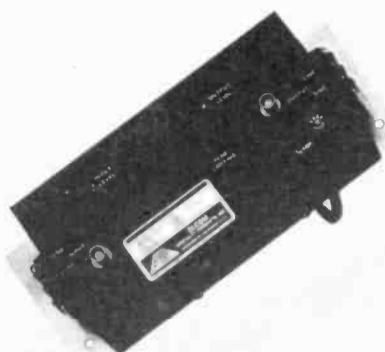
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The Audio Process, V.U.

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. Niederkofler
WCUE
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 like the one shown 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 TLO-72 or the MC-1458 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 collect-

tor." I would very much like to receive copies of these reports, if possible.

James A. Allyn
KWWW
Wenatchee, WA 98801

BEE Replies:

We will see if we can get them for you, Jim, but give us some time 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's impossible to get a feel for the value of a 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)

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Circle 106 on Action-gram.

March FCC Developments

by B. Jay Baraff
Baraff, Koerner & Olander, 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 and 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 KLBK 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, Aukesha, 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-

casting false, misleading and deceptive matters with respect to contests. However, the Commission indicated that, in this case, the principals were not involved in the wrong-doings but only exercised a lack of control.

C. The FCC has now established new procedures to be followed in future distress sale proceedings. The buyer and seller will each submit an appraisal of the

station's fair market value and the average of these appraisals will be used to determine the ratio of the purchase price of the fair market value. If the difference between the appraisals exceeds 5% of the average of the appraisals, the parties will jointly retain a third appraiser and the average of those appraisals will be used to calculate the ratio. No distress sale will be approved in which the ratio

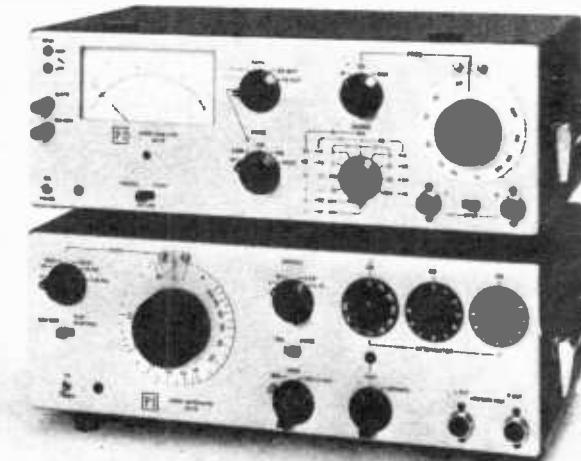
between the purchase price and the fair market value exceeds 75%.

Increase in Assignments

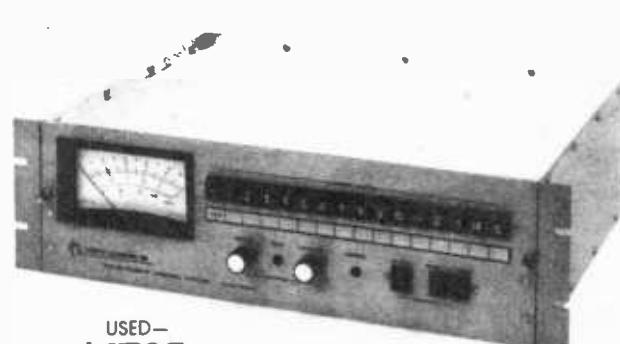
In a major proposal, the FCC has requested comments changing the availability of commercial FM broadcast assignments to allow stations with Class A facilities to operate on Class B-C

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SPECIALS

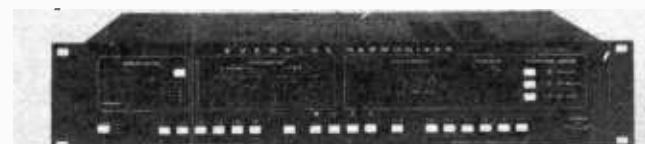


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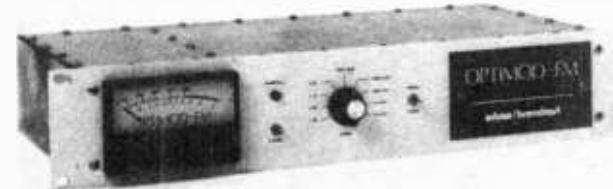


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BCA

Elements of Production Recording

(Continued from page 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 studios for many years feel they had all that was necessary to turn out their products. But, in certain 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 to be segued 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.
- The sync track's pulse and drive to the slide/motion projector.

One might say, well, we can do this show very simply by mixing certain elements together and piece the entire show together by editing it. 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

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

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.

TIME	CLIENT								DATE
	TRK 1	TRK 2	TRK 3	TRK 4	TRK 5	TRK 6	TRK 7	TRK 8	
:00	Intro Music	—	—	—	—	—	—	—	SYNC Title Opening Frame
:30	Intro Music	Announcer Music	—	Announcer Opens Shows	—	Sirens	—	—	SYNC Wide Shots of Hospital Complex
1:00	—	Announcer Music and Fade	—	—	Street Noise	Sirens	Doors, Stretcher	SYNC Ambulance	
1:15	—	—	Doctor's Talking	Emergency Room Noise	Street Noise	Page System	—	SYNC Emergency Room Activity	
1:35	Low Elevator Music	—	Doctor's Talking	Emergency Room Noise	—	Page System	—	SYNC Doctors Conference Over X-ray	
								SYNC	

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

The sync track will require only one

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 multitrack 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 hundreds of effects, 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 retiming their insertion a few times until the best mixture is achieved. The Sel-Syncing 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)



The MAP II Multiband Audio Processor gives you optimum modulation of your AM/AM-Stereo program. Yet it costs much less than similar systems.

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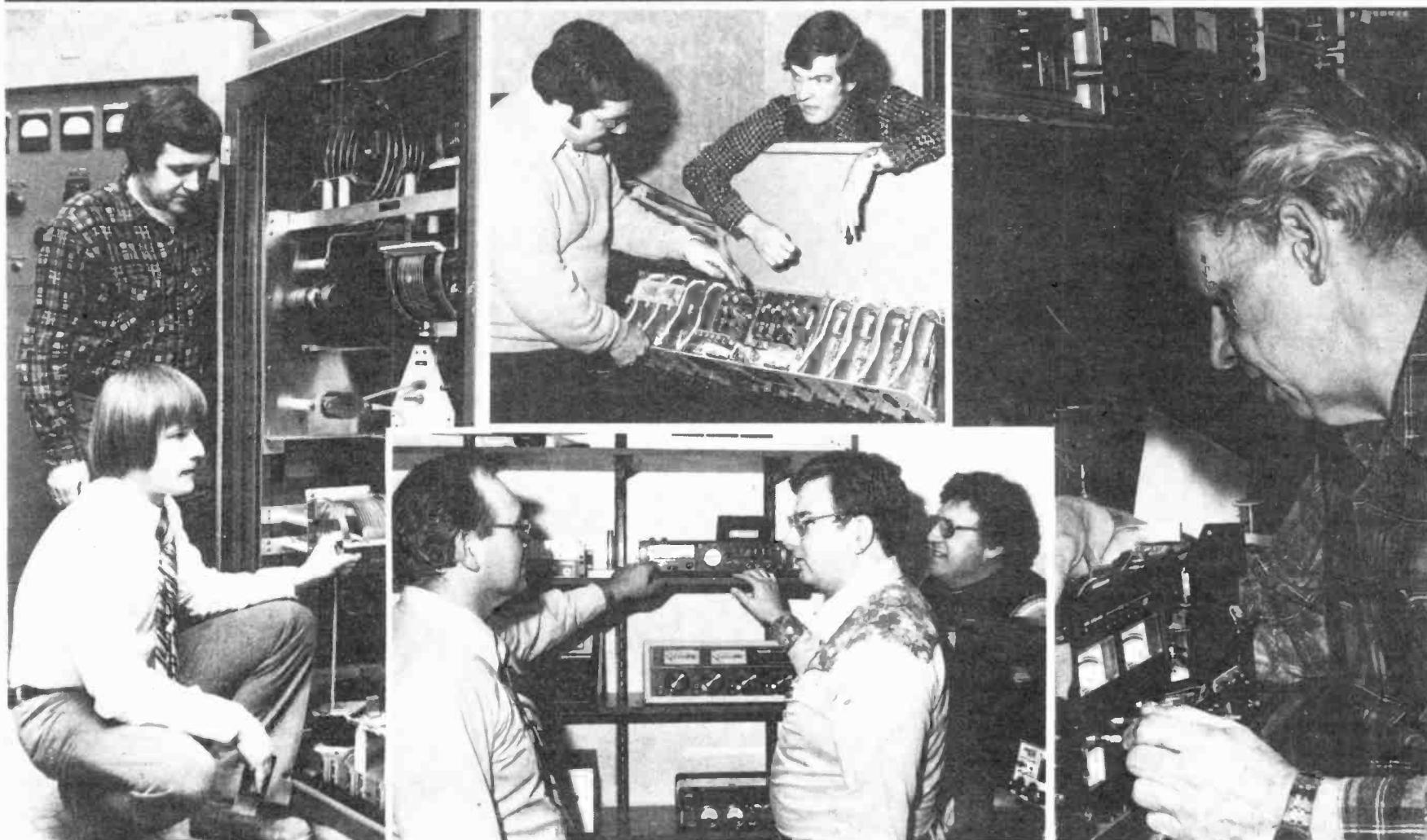
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Bill Sacks on the Audio Process

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 cir-

cuits. 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 indecisive sonic quality. The worst offenders in this regard are most of the ceramics and electrolytics. In my opinion tantalum 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, parylene, and polycarbonate. All of them 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 good high frequency characteristics. This applies to de-coupling as well as coupling caps. This entire subject was thoroughly treated in "Selection of capacitors for optimum performance" by Walter G. Jung, and Richard Marsh, presented as a 2 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)

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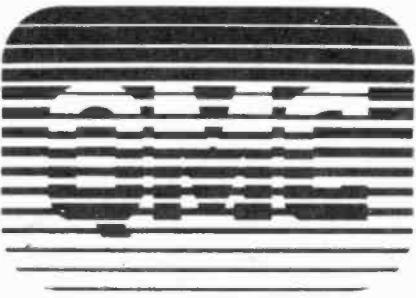
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WKDC Tests

(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."

Capacitors

(continued from page 8)

my V.U. meter amp build-it project diagram last month was abused by a layout artist formerly contracted by BEE to ink pencil drawings. The diagram was returned to us one day before we went to press, too late for corrections. We have a new artist, and hope to avoid this sort of thing in the future. Hot stuff next month, no (April) foolin'.

Cleaning Kit from TEXWIPE

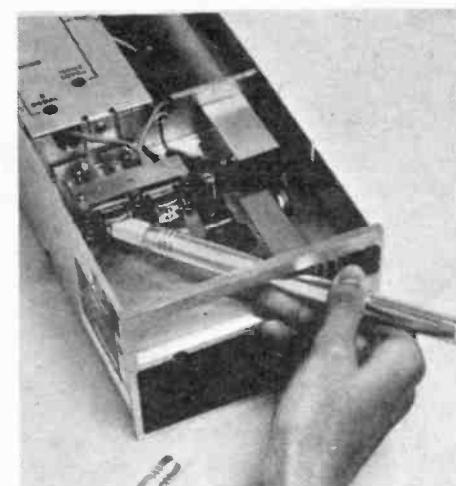
Hillsdale, NJ . . . Broadcast maintenance engineers are all too familiar with the difficult task of maintaining clean tape heads. Although many engineers use cotton swabs or pencils wrapped with cloth tips, the effect is often inadequate and sometimes damaging to the equipment. As usual, one of the most 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 Clean-

ing 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 results, consider the Texwipe Kit. It looks like one of the best things to come along in a small package in quite some time.



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International Equipment Representatives

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 select 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.

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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 EXCITER is totally compatible with previously enhanced program material.

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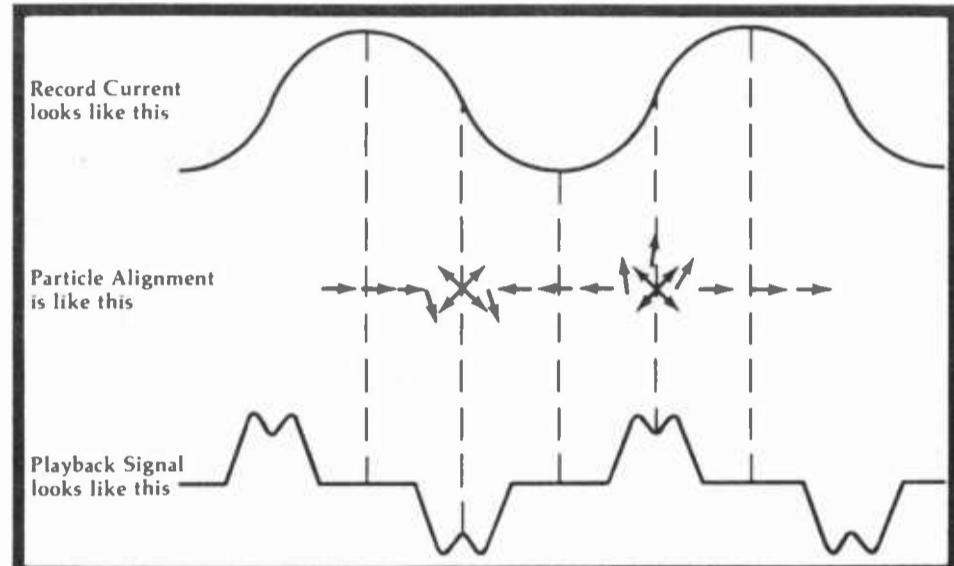
What About the Control Track?

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 tach or tonewheel is recorded by an unbiased low frequency

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 incom-

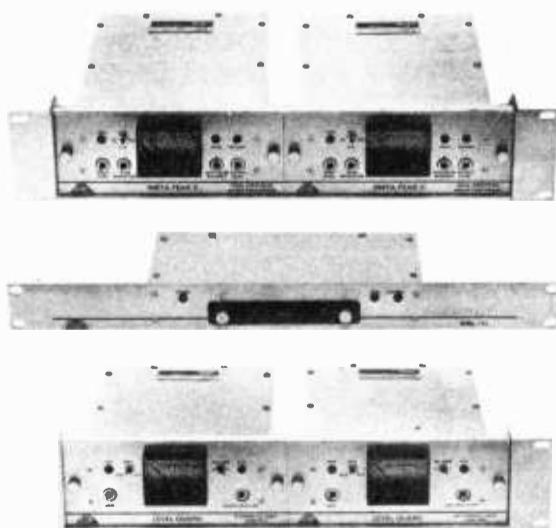


transducer on the bottom 1/16th inch of tape. Recording any AC signal without bias produces a highly distorted recording. Consider the following: When the AC signal is positive, the magnetic particles on the tape are aligned in a horizontal direction with all North and South poles in parallel. When the AC signal is negative, this alignment is reversed.

ing 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?"

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Reader's Forum

(continued from page 4)

of how much \$\$ the seller wants for his equipment. Also, not publishing prices makes it impossible for "bargain hunters" like myself to hunt same!

If it were my publication, I would REQUIRE that ALL ads state prices IN THE AD!!! No price given ... no ad. This isn't unreasonable; many newspapers require that the seller publish the price in order to run the ad.

The key code list is enough of a hassle! Put the prices back in the paper all the time so that ALL BEE readers have a fair chance to buy and sell!

Keep up the good work ... we need BEE!

Hank Landsberg
Drake Chenault Ent.
Canoga Park, CA 91304

BEE Replies:

We appreciate your concern, Hank, but as Jack Vobbe's letter (and many others we've received over the years) says, BEE moves equipment. We certainly agree that sellers should include asking prices, but remember, many people don't know what the right asking price really is in the market. In fact, we have been asked by a number of people to publish an annual "Blue Book" on prices realized for equipment listed in BEE each year. It's not a bad idea, except the costs involved in putting it together might exceed the revenues from selling the "Blue Books." We have noted that about one-third of the listings come in with asking prices, but we cannot state that these items are sold any quicker than the ones that come in without asking prices. We simply don't feel that we can insist on an asking price without putting some of our readers in an untenable position. All we can say is if you have an asking price in mind, please list it!

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 if it's a hassle, but it makes the situation fairer for our foreign readers.

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QSC Files Three Amplifier Patents

Costa Mesa, CA . . . Three patent applications have been filed for QSC Audio Products' recent line of pro-audio power amplifiers. According to Patrick H. Quilter, chief designer, the circuitry embodied in the patents gives the QSC amplifiers several advantages not available in other amplifiers. These benefits include full protection against short-circuit loads of any duration, without loss of audio performance; protection

against DC and sub-audio faults without unwanted audio shut-downs; stable high-frequency performance, improved transistor cooling and increased overall reliability. Mr. Quilter describes the specific improvements as follows.

"One major problem in designating reliable pro-audio amplifiers is to assure protection against common mistakes and accidents. Shorted speaker cables can cause unprotected amplifiers to fail in-

stantly, so short-circuit protection is vital. There are numerous electronic protection circuits, but most of them detract to some extent from maximum audio performance, particularly into the heavier loads. Thus, some companies choose not to use protection circuits, thereby increasing the chances of catastrophic amplifier damage. Other companies prefer to fully protect the amplifier but must accept that some excess distortion may

appear during heavy peaks, as the protection circuits begin trigger. Our approach relies on a two-stage protection. Full-time electronic limits are used, at a level high enough to pass full-power audio, but adequate to protect the output transistors against instant failure."

"If the short persists, a second level of protection comes in, which cuts the limits to a lower value, safe for any length of time. This second level of protection cannot be triggered even by highly reactive speaker loads, so full audio performance is maintained without loss of protection when actually needed."

Low cut-off

"Another basic problem with modern, direct-coupled amplifiers is that there is not inherent low frequency cut-off to the speakers. If a power transistor fails, the amplifier can destroy speakers with raw DC power. The usual solution is the DC protection relay or crowbar circuit, which acts to remove power after detecting a DC fault. Unfortunately, the circuits either tend to false-trigger and cause unwanted shut-downs or may fail to act on major faults. Our second patent addresses this problem by describing a re-arrangement of the basic power supply components. We are able to retain all of the well-known audio advantages of modern amplifiers, while eliminating the DC path to the speakers. This provides fool-proof DC and sub-audio speaker protection, while also eliminating the false-triggering problems."

"Our third patent describes the basic, overall circuit which we developed for our amplifiers. In combination with the developments covered by the other patents, we have achieved an optimal, greatly simplified design which enhances overall reliability, allows us to direct-mount the power transistors to the heat sinks for better cooling and, which offers excellent high-frequency performance without the need for dangerously high slew rates. The net result is clean, stable operation, without the occasional ultrasonic oscillations and blown tweeters which plague some of the "high slew-rate" designs."

"We have combined these major developments with many other improvements and features which we think add up to unmatched performance. These circuits are used in all nine current QSC power amplifiers."

Sony Caters to Religious Market

New York, NY . . . The religious broadcasting market is large, economically powerful and ready to invest in an all out campaign to promote, via radio and television, Christianity. The most common complaint voiced by the religious market is that they have not been allowed, in the past, to buy. Prime time as well as industry attention has been reserved for the commercial stations, the stations that belonged on radio and television, the stations that drew the advertisers. Everyone underestimated the broad appeal of a product whose main pitch is that you really can go around more than once.

The recent NRB show held in Washington, D.C., demonstrated the vitality of the religious market as well as the meager response of suppliers to the special needs of this market.

One Company's Approach

One of the most prominent manufacturer's display at the NRB show was hosted by Sony, a company which seems

to be among the first to recognize the unique nature of the religious market, to understand the special physical needs of that industry.

BEE recently spoke with Sony's Irwin Ungerleider who confirmed his company's interest in and commitment to the religious market. Ungerleider explained that Sony has three separate product areas which are directed toward the needs of religious broadcasting: 1) an industrial line featuring the Betamax film projector, the Super 8 telecine;

2) a full blown broadcast line, featuring

a compact editing system; 3) a line of gang duplicators especially geared toward the needs of the religious broadcast station.

Mr. Ungerleider spoke at length about the concerns of religious broadcasters and Sony's interest in their development. He assured BEE that Sony's efforts to deal with this market had just begun, and that his company would be involved in further research, aimed at understanding not only the physical needs of the religious market, but also the forces which have led to its commercial success.

March FCC

(continued from page 5)

channels, if a Class A channel is not available; 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)

How to become a SUCCESSFUL CONSULTANT in your own field.

Have you ever wished you could quit your job and start working for yourself?

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The way to begin is by reading *How to Become a Successful Consultant in Your Own Field*, by Hubert Bermont.

Clear, straightforward, packed with solid information and advice, this authoritative manual tells you everything you need to know to establish your own independent consulting practice. Here's a sampling of the contents:

- What does it take to be a successful consultant? (See Chapter 1.)
- How to get started (See Chapter 3.)
- How to operate your business—a collection of "tricks of the trade" (See Chapter 5.)
- What to charge your clients—plus five helpful rules on fees. (See Chapter 6.)
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- How to market your ideas. (See Chapter 11.)
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- And much more!

Perhaps no one is better qualified to have written this book than Hubert Bermont. He has served as consultant to more than 70 major corporations and trade associations, including the U.S. Chamber of Commerce, McGraw-Hill, the Electronic Industries Association, Evelyn Wood Reading Dynamics and the Smithsonian Institution. Yet he made the decision to become a consultant only after being fired from an executive position at the age of 43. You'll learn first-hand how he did it—and how you can do it, too!

How to Become a Successful Consultant in Your Own Field is just \$20 (tax-deductible if you use it for business purposes), and you're fully protected by this unconditional money-back guarantee: Keep the book for three weeks. If you're dissatisfied with it for any reason whatever, simply return it and every penny of your \$20 will be promptly refunded—no questions asked!

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See Action-gram
on page 15 ...
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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 it. So a 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,

i.e.: 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 Disc #, 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 audio/visual 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

New Mexican Affiliate

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.

Carrillo, ex-CEO of radio stations X-TRA-AM, XEROK, and Chairman of the Board of five companies in Mexico, claims that one of the main advantages that his company will have over its competitors is that the I.E.R. sales staff will visit all stations and recording studios of

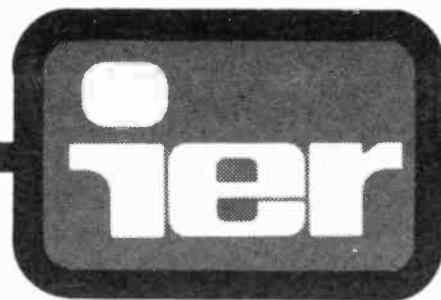
the Republic of Mexico at least ten times a year.

In the past, manufacturers 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.

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....

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.



TELEFONOS:
I.E.R. (714) 459-3691
T.S.D. (714) 459-3825
TELEX: 181756

International Equipment Representatives

O ESCRIBANOS A:
I.E.R.
1205 Prospect, Suite 510
La Jolla, Ca. 92037

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

Circle 115 on Action-gram.

The Exchange

AMPLIFIERS

Want To Sell

A-B Systems 205, 200 watt amp, new, reasonable. Key Code 4-31.

QRK Alpha II stereo pre-amp. Key Code 4-60H.

Marantz 240 stereo power amp, 250 watts, mint cond, reasonable. Key Code 4-31.

Cerwin-Vega Model A-3000I stereo power amplifier, need set of output transistors. Key Code 4-17.

Rust RF amplifier, model 0815A, serial #24, good for parts. Key Code 4-60G.

Dynaco 400 stereo power amplifier. Key Code 3-77C.

Gates utility amp. Key Code 3-72.

SWTP 210 A amplifier. 200w mono, solid state, excel cond, w/manual. Key Code 3-69A.

Dyna Co. amplifier stereo 70, also 75 mono. Key Code 3-53.

Crown D60 audio amplifier, rack mount. Key Code 3-32.

Kassino 200 amp and large built-in speaker w/matching extra speaker. Key Code 3-11.

Gates M5576 program amplifier. Key Code 3-53.

Marantz 240 power amp, 125 watts/channel, mint cond. Key Code 2-18.

MAC 30's and 40's w/tubes. MAC 2100, Crown D-75. Key Code 2-54.

Marantz 7T pre amp, mint cond. Key Code 2-18.

Johnson ST-4 SCA tuner, 67kHz, new. Key Code 2-41.

SAE XXXIB, SAE 2400, SAE 2500. Key Code 2-54.

Ampex 80-watt, new mono solid state. Broadcast type power amps that are new and in factory cartons. 19" R.M. Key Code 2-65B.

Op-amp Labs model SM 100 50 w/channel, like new. Key Code 2-25.

Altec 468 A equalizer amplifier. Key Code 2-61.

McIntosh MC40 amplifiers, clean pair. Key Code 2-70E.

PA amplifier, 45W, w/mic & line inputs, solid-state, overload protection. Key Code 2-14.

Marantz 3300 stereo pre amp, mint cond. Key Code 2-18.

Technics SU-8011 25-watt per ch. stereo amplifier, new, in original unopened carton, within warranty. Key Code 2-56.

Want To Buy

Marantz 1, 2, 5, etc, Mac and Quad II, tube amps/preamps, need to be operating, must be reasonably priced. Key Code 4-49.

McIntosh MC-3500, 350 watt tube amp, working cond. Key Code 3-78.

McIntosh MC-2300, 600 watt solid state, working cond. Key Code 3-78.

Fisher SA-100, 150 watt tube, working cond. Key Code 3-78.

Marantz 7T pre amp solid state, need many, working cond. Key Code 3-78.

Marantz model 5, need one, any condition. Key Code 2-70.

Automatic tape control cartridge, playback and record amplifier. Key Code 2-4.

ANTENNAS & TOWERS

Want To Sell

Andrew, 4 bay FM antenna #1304, tuned to 91.5. Key Code 4-43.

Andrew Heliax, 30' piece, new in orig box, HJ-5-50/RG-318/U. Key Code 4-2.

Andrew 1304 4-bay FM antenna, power gain of 3.6, horizontal, gd cond, complete. Deicers included, shipping weight 200 lbs, 3-1/8" input flange. Key Code 4-41.

In the U.S. call 800-336-3045
For any Key Code Names and Addresses.

Potomac Instruments antenna monitor model number AM-19, serial number 1363, specifications, day-night modes installed in unit. Unit is wired for 2 towers. Lynn Mayo, WBCA, Box 426, Bay Minette AL 36507. 205-432-1488.

ERI, 2 bay horizontal antenna, FMA-2, with heaters, tuned to 88.3. Key Code 4-43.

Phelps Dodge 6 bay HP, 94.1 MHz, used for 6 mos emergency. Key Code 4-48.

Shively 660, 6 bay horizontal antenna, tuned for 106.1 MHz, will handle 5kw RF input. Key Code 4-19.

Potomac Instruments, Model AM-19 (204), serial # 1363, day-night modes installed in unit, unit wired for 2 towers. Key Code 4-35.

Heliax 25' roll, Andrew #8414, 5/8" diam, slightly damaged outer insulation, no kinks or inner damage. Key Code 4-2.

RCA BTI-2H, 2 bay antenna, complete w/installation instructions, excel cond, tuned to 90.7 MHz. Key Code 3-29.

Cablewave coaxial cable 170 ft, 7/8" foam FCC 78-50J, new unused. Key Code 3-76.

CCA FM LP-2 antenna tuned to 91.5. Key Code 3-53.

Cablewave coaxial end terminal for FCC 78-50J cable (2), new. Key Code 3-76.

3 Bay FM antenna, vertical and horizontal polarization tuned to 103.1. Key Code 3-11.

Coax transmission line, 175', 7/8", new. Key Code 2-41J.

RCA TFU-21BLS, medium power Ch 23 pylon, on ground, must sell. Key Code 2-23.

RCA rigid xmission line, 51.5 ohm, 20' sections, 440' available. Key Code 2-44.

Hy-Gain 402BS, 2 element 40 meter beam, assembled, tuned, never up. Key Code 2-9B.

RCA BFA-8B, 8-bay horizontal FM antenna, tuned to 94.9 w/transformer, no deicers ready to ship. Key Code 2-23.

Heliax 3-1/8", new, on reels, up to 500'. Key Code 2-26C.

RCA BFA 5 bay FM ant, 99.7 MHz w/matching transformer. Key Code 2-44.

Want To Buy

Transmission line, 1/2" to 1/4", capable of 1kw at 103.1 MHz, any length, need 100-150'. Key Code 4-41.

RCA or Harris 8 bay circular polarized, tuned to or tunable to 106.1. Key Code 4-55.

Tower 50 to 300', self supporting or guyed, will arrange pickup, prefer on ground, but will disassemble also. Key Code 4-41.

8 bay circular polarized FM antenna for 98.3 MHz. Key Code 4-19.

RCA 8 bay circular polarized for 106.1 MHz. Key Code 4-19.

Tower, 80' to 100', any cond, for FM operation. Key Code 3-2.

FM antenna, 2-3 Bay circularly polarized, tuned to 89.3 MHz. Key Code 2-32.

Guyed type, 150' tower. Key Code 2-50.

Phelps-Dodge 3 bay CFM-LP3 with or without radomes. Key Code 2-38.

Air Heliax Cablewave HCC-15/8-50 approximately 600'. Key Code 2-38.

AUDIO PRODUCTION (OTHER)

Want To Sell

DBX 122, like new cond. Key Code 4-60D.

Garron stereo phase enhancer, model STE-100, gd cond. Key Code 4-76A.

Sound Workshop 262, Mic-Mix SL-305 reverbs, new, reasonable. Key Code 4-31.

Allison Gainbrains (2). Key Code 4-20B.

DBX 124, like new cond. Key Code 4-60E.

Mobile studio, 1975 Dodge Sportsman, has Gates Studioette board, turntables, monitor amp for outside speakers, gd cond, camper conv to studio, van all in gd shape. Key Code 4-16.

CBS reverb unit complete. Key Code 4-32A.

FULL COMPASS SYSTEMS

Edcor, Inovonics, Orban, Uriel, Delta Labs, Technics, dbx, Lexicon, Eventide, Strand Sound, and Tapco. All available from Full Compass Systems, 6729 Seybold Rd, Madison WI 53719.

800-356-5811

SCA generator, Volumax 400, 100 tube-type receivers, two racks with 2 and 3 tape decks and switching gear, over 200 6-8 hr. tapes, everything needed for background music operation, all in gd to excel operating cond. Key Code 4-64.

DBX 158, new, reasonable. Key Code 4-31.

Farfisa VIP 345 organ. Key Code 4-20A.

DBX noise reduction, 8 trks 157 (rack mount). Key Code 3-15D.

Eventide Instant Phaser. Key Code 3-77F.

Pre-amp #M5530 (2), Gray model #602C (2) equalizers. Key Code 3-11.

Melotron. Key Code 3-15E.

White 4301 1/16 octave 41 Band Active EQ, new, \$1175. Audiotronics, 652 Glenbrook Rd, Stamford CT 06906. 800-243-2598.

API equalizer 550A w/8 position API rack mount. Key Code 3-54.

DBX 142 noise reduction units (2), each stereo, used 1 yr. Key Code 3-12.

Audio & Design Recording E950-RS Paragraphic EQ, new, \$1740, sell \$1250. Audio-techniques, 652 Glenbrook Rd, Stamford CT 06906. 800-243-2598.

Eventide Omnipressor nearly new. Key Code 3-77D.

Quad 8, RV10 spring reverb. Key Code 3-77E.

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.

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

Altec Lansing rotary attenuators, 600 ohm in and out. New and in factory cartons. RP series, 8-gang, 6-gang. RA series, 3-gang, single gang. Key Code 2-65A.

Loft 440 delay line/flanger, new. Key Code 2-18.

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

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

Urie 567 P.A. processor, new. Key Code 2-58.

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

Eventide 1745A DDL and 1745M DDL, excel. cond. Key Code 2-25.

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

MXR, mini-limiters custom in & out switches & stereo strapping switches, 4 pair avail. w/separate rack mount power supply. Key Code 2-52F.

Dolby A301, Dolby 360. Key Code 2-54.

Ivie Audio Analyzer, IE-30s and ID-10s in stock. Triad Productions 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-20 working or non-working. Key Code 3-8.

Orban dynamic sibilance controller. Key Code 2-33.

AUTOMATION EQUIP.

Want To Sell

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

SMC 250 RS carousels-mono (7), SMC EC-2 encoder (1), ASR-33 logging printers w/punch tape (2). Key Code 4-33.

Gates SC-48 programmer, gd cond, unused. Key Code 4-71.

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

McCart 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.

\$17,000

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

SMC DT-4, Data Terminal

ACTION-GRAMAPRIL 1980
USE BEFORE
JULY 1980

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:

Name _____
 Title _____
 Company/Station _____
 Address _____
 City _____
 State _____ Zip _____
 Telephone _____
(Verifiable number must be provided)
 Signature _____

KEY CODE ORDER SECTION:**TOLL FREE KEY CODE HOTLINE****800-336-3045**

In Virginia call 703-525-0400 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:

4/80

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.

101	107	113	119	125	131	137	143	149
102	108	114	120	126	132	138	144	150
103	109	115	121	127	133	139	145	151
104	110	116	122	128	134	140	146	152
105	111	117	123	129	135	141	147	153
106	112	118	124	130	136	142	148	154

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. You receive BEE monthly WITHOUT THE KEY CODE LIST free via 3rd class mail if you send in this form at least once a year. You buy the Key Code lists for \$5 by using the Key Code order section above; only when you need it.

- 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 pro-sound 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

1. WTS or WTB, Category:

Text:

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.

5. WTS or WTB, Category:

Text:

2. WTS or WTB, Category:

Text:

6. WTS or WTB, Category:

Text:

3. WTS or WTB, Category:

Text:

7. WTS or WTB, Category:

Text:

4. WTS or WTB, Category:

Text:

8. WTS or WTB, Category:

Text:

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 \$12 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.

FILL IN, REMOVE, AND
 MAIL THIS FORM TO...



BROADCAST EQUIPMENT EXCHANGE
 P.O. BOX 1238
 ARLINGTON, VA. 22210 U.S.A.

The Exchange

AUTOMATION ... WTS ... CONTD.

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

IGM 500 programmer, Scully playbacks (3). Carousels (3), cart playback (4), time announce, network join, logging encoder & printer. Very reasonable. Key Code 3-23.

Gates SC-48 programmer, TPG-2 time pulse generator, monitor & control panel, Stack-55 cartridge playback, RA-1 random select unit, time announce, network fader, very reasonable. Key Code 3-23.

SMC stereo automation, DP-1 programmer, two loggers w/tape reader, 3-stereo Revox A-77's 5-SMC random select carousels, time announcer, single play cart with inputs for additional units, provision for Marti Remote Call in using 40 Hz tone, in top cond, in four racks. Key Code 2-67.

Sono-Mag model 252 stereo, factory recon, still in case. Key Code 2-68E.

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

Sono-Mag model 252 stereo. Key Code 2-68F. Gates automation system, mono, 6 carousels random access, silence sensor, SP-10 programmer, motor driven fader, overlap, monitor amplifier, odd-even time announce cart units, I.D. & fill cart units (Criterion) Metro-tech logger, all manuals, 10 sources, can be upgraded for stereo. Key Code 2-48.

Mono 250 carousel. Key Code 2-51A.

Scully 270, reel to reel, playback only, tape decks (2). Key Code 2-68B.

Altken Carousel Control unit older model w/interface to control 2 model 350 carousel. Key Code 2-68G.

Sono-Mag Model 350 monaural. Key Code 2-68C.

Automated Broadcast Controls, time announcer control. Key Code 2-68H.

Carousel, 20A's (2), 22A (1), IGM "slot machine", gd cond. Key Code 2-10A.

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

Sono-Mag model 250 monaural, factory recon. Key Code 2-68D.

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

Want To Buy

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

Harris LED terminal for System 90 automation. Key Code 4-25.

Schafer 800 brain. Key Code 3-20.

25Hz tone detectors. Key Code 3-20.

25Hz tone generator. Key Code 3-20.

IGM Time Announcer 382 or SMC Time announcer 581 in working cond. Key Code 2-4.

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), 5:1 zoom. Key Code 4-46A.

RCA TK 630's, w/10-1 Schneider lenses, ITE Pan heads, 300' camera cable per camera, tripods. Two avail. Key Code 4-26A.

RCA field chains (3), TK-14, cable, zoom lenses. Key Code 4-53.

Sony CVC-2100A-R1, 1" vidicon B&W w/3" electronic viewfinder, pan & tilt head, 4:1 zoom & 10' mini cable, very gd cond. Key Code 3-33B.

TV25TN B&W camera cable, 2 large reels. Key Code 3-52.

**In Canada call United Video
613-741-5554**

GE 4PC4A1-Rev 2, 3" L.O. B&W camera head (only) fair cond. Key Code 3-33C.

Marconi Mark 7 color camera cable, large reel, several 100'. Key Code 3-52.

Akai VC 150 color/sound cameras (11) w/control unit, zoom lens, auto white balance, AC, new w/cables and filters, all or part. Key Code 3-56A.

GPL PD-250A, 1" vidicon B&W camera heads (2), w/50' cable only, gd cond. Key Code 3-33D.

**GE PE-400 Color Cameras—Pedestals, racks, like new, ea. \$10,000
GE PE-350 Color Cameras—All accessories, good condition, ea. \$5,000
GE PE-240 Film Camera—Automatic gain & blanking, \$8,000
IVC 500 Color Camera—Lens, cables, encoder, \$4,000
Norelco PC-70 Color Camera—16x1 200m lens, 2 available, ea. \$16,000
Norelco PCP-70 Color Camera—Portable or studio use, \$4,000
Norelco PC-60 Color Camera—Updated to PC-70, new tubes, \$8,000**

30 Brands of New Equipment—Special Prices. We will buy your used TV equipment. To buy or sell, call Toll Free 800-241-7878, Bill Kitchen or Charles McHan, Quality Media Corporation. In GA call 404-324-1271

RCA TK-42 color cameras incl. cam. heads & TD9 pedestals (2). Key Code 3-52.

Ikegami HL-77 Fujinon lens, 150 hrs, complete w/case & acces. Key Code 3-32.

Hitachi FP-40 saticon camera, new, complete w/factory warranty (\$23,500 list), \$17,750. SounDesign, PO Box 921, Beverly Hills CA 90213. 213-276-2726.

Singer video camera, blk & white, Model T-1. Key Code 3-45.

RCA TK-31A, 3", L.O. B&W chains ((2), gd cond. Key Code 3-33A.

Norelco LDH-1 camera, modified trimmer, matrix, I and Q encoder, and genlock. Comparable to LDH-20. Schneider 5x1 zoom w/diopters. ITE tripod and dolly, \$5500. J. MacAllister, Tufts Educ. Media Ctr. TV Prod. Dept., 136 Harrison Ave., Boston MA 02111. 617-956-6675.

Sony DXC-5000 cameras (2), w/CCU, \$1000. J. MacAllister, Tufts Educ. Media Ctr. TV Prod. Dept., 136 Harrison Ave., Boston MA 02111. 617-956-6675.

Hitachi FP-1212 and 1000P, FP-1212 w/1:10 zoom, 1000P w/1:5 zoom, both excel. cond., also a Phillips LDH 20-3 w/1:10 zoom lens also in excel. cond. S. Lefkowitz, Video Prod. Svcs., 1212 Tenth St, Berkeley CA 94710. 415-526-6741.

Hitachi FP20 Saticon, new, factory warranty, latest model, \$8400, complete but w/o lens, incl. 3 Saticons, carrycase. SounDesign, Box 921, Beverly Hills CA 90213. 213-276-2726.

Norelco PC-70 cameras in good condition. Complete except for lenses. Available from R&B Industries, 629 Grove St., Jersey City NJ 07302. 212-924-7910.

Want To Buy

Ikegami, HL-35 and HL79A. Key Code 4-11.

RCA TK11 camera control, either studio or field version. Key Code 4-6.

IVC-500 camera cable. Key Code 3-24.

RCA/Walker, Electra-Zooms, Studio zoomars, Universal zoomars, GPL-PYE/Watson zoom 75 series, need several of these, any cond. Key Code 3-67.

RCA/HF TD-1A studio camera pedestals, need 4, any cond. Key Code 3-67.

RCA/HF TD-30BT, TV studio camera crane, need one, any condition. Key Code 3-67.

RCA TK-40A, TK-41A, TK-14, GE PC-15, PC-25, PC-11, DuMont TA-124B MK 1, GPL PA-600A, EMI 2001B, Marconi Mark II, need one of each. Key Code 3-67.

CART MACHINES**Want To Sell**

Harris 90-2, stereo r/r, new evaluation sample, used only 5 hrs, 1,000 & 150 Hz cue tones. Key Code 4-23.

Collins R/P cart decks, runs, as is. Key Code 4-65A.

Spotmaster 500C mono record-playback (2). Key Code 4-33.

Spotmaster Ten Spot with two audio switches. Key Code 4-68D.

Sparta mono playback cart machine, excel cond. Key Code 4-76E.

ATC-4 playback, 1 record playback, all complete and in working cond. Key Code 3-79A.

Tapecaster R.P. gd cond. Key Code 3-70A.

ITC R.P. good cond. (2). Key Code 3-70B.

Spotmaster 5 spot, gd cond. recond by Spotmaster. Key Code 3-70C.

Rapid-Q, 3 in a row cart machine. Key Code 3-72.

Tapecaster playback. Key Code 3-70D.

RCA RT-7 audio cart P.B. deck. Key Code 3-52.

Spotmaster triple deck mono playback machine, new motor and all 3 recue, gd shape, recently removed. Key Code 3-37.

Sparta 4625 broadcast cart stereo record & play, gd cond, new r/pheads, new motor. Key Code 2-27.

Gates Cartritape II w/record package, record amp is tube-type, fair but working. Key Code 2-14.

ITC RP-004 stereo record/play machine, all 3 tones, good cond. Key Code 2-41L.

ITC RP series delay cartridge recorder, excel cond. Key Code 1-75E.

Spotmaster 3100 playback, w/full cuing, in service till 11/79, gd cond. Key Code 1-43A.

Collins 642A-2 cart machine w/216C-2 record amp. Key Code 1-74.

Spotmaster cart machines, new and used. Send for literature. Best package prices on trade-in of surplus equipment. Autodyne. Box 13036, Orlando FL 32859. 305-855-6868.

Want To Buy

Cart machines, retired, junk cond, barely working, etc, like Spotmaster 500, 505, etc. play/record anything you have sitting around gathering dust and taking up your room, stereo or monaural. Key Code 4-41.

Cartridge recorder-reproducer & 3 playback units, mono or stereo, any cond for reasonable price or tax-deductible donation to education. Key Code 4-57.

Cart machines, 1 record/play and 2 play only, in gd. cond. Key Code 3-64.

Collins, made by A.T.C., cart output switcher model AMS3 for parts. Key Code 2-46.

Record/playback cart machine (3). Key Code 2-7.

Any make in gd cond., mono, record/playback, w/tones, w/cues and fast forward. Key Code 2-11.

ITC 3-D and ITC RP delay, other models considered. Key Code 2-42.

CASSETTE & REEL-TO-REEL RECORDERS**Want To Sell**

Scully 280B-4, 1/2", new mounted, mint cond. Key Code 4-78C.

3M 56, 16trk, 15/30 w/16 chs of relay operated dbx noise reduction. Key Code 4-74A.

Tascam 80-8, w/DX-8 DBX floor mount cabinet & remote control, like new cond. Key Code 4-27.

Ampex 601 reel to reel recorder, presently in use in control room, gd cond. Key Code 4-21A.

Ampex AG 440-4, with 2 trk & 4 trk heads in portable cases, very gd cond. Key Code 4-18A.

Berlant/Concertone 30 bdct recorder, 7-1/2-15 ips, 1/2 trk, green finish, excel cond w/manuals. Key Code 4-6D.

Torque and capstan motors for TEAC R310 transport, miscellaneous extra parts list, best offer. Key Code 4-4.

Heads, 16 trk ERP for Scully 100, also 8 trk conversion kit for 100, new. Key Code 4-78.

Crown 800, stereo (fair). Key Code 4-68C.

Metrotech slow speed logger (4 pass), 3 yrs old, needs head. Key Code 4-65.

Notronics 1/2 trk stereo playback head for Ampex 300-2, never used. Key Code 4-60C.

Sony reel to reel recorder, portable needs work, but is operating. Key Code 4-32C.

Ampex 351 full trk E/R/P head assembly, factory rebuilt, never used, cosmetically mint, best offer. Key Code 4-4.

Ampex AG-500-2, mint cond. Key Code 4-78D.

Scully 280-B, 7 1/2/15, AC motor, in console. Key Code 4-74B.

Tascam 70-4, 1/2", 4 trk recorder, new, excel cond. Key Code 4-52.

Teac A-33405, 4 trk w/sync in Anvil flight case. Key Code 4-34.

Tape-A-Thon 703-10 decks (5), with 3 1/4 ips motor, excel cond. Key Code 4-64.

Ampex 300 meter panel & bathtub electronics. Key Code 4-60B.

Scully 280B in console, low hours, nice cond. 2 trk. Key Code 3-41D.

Conceptrone 3 motor recorder, parting out. Key Code 3-22.

Teac A500 stereo cassette deck w/memory and Dolby. Key Code 3-27A.

Magnacord reel to reel (1), old. Key Code 3-11.

FULL COMPASS SYSTEMS

Otari reel to reel full track, 2, 4, 8, 1

The Exchange

CASSETTES ... WTS ... CONTD.

Otari 5050, stereo $\frac{1}{2}$ trk recorder, 1 yr old, 7 $\frac{1}{2}$ ips and 15 ips, $\frac{1}{4}$ trk and $\frac{1}{2}$ trk heads. Key Code 3-36.

RCA RT-21B, reel to reel tape decks, rec/pb, super cond. (2). Key Code 3-45.

Teac A4010 reel-to-reel stereo deck w/auto reverse, 3 $\frac{1}{4}$ to 7 $\frac{1}{2}$ ips. Key Code 3-27.

Telex high speed cassette rewinder, 3 cassettes at a time, like new cond., \$80. Call Gary Hovanec, (313) 233-3002, after 2 pm EST.

Ampex AG-300, 1 tk. Key Code 3-57H.

Teac Tascam 40-4, $\frac{1}{4}$ trk, great cond, full specs, includes 1 roll of Scotch 250, biased for 250. Key Code 3-62A.

Ampex 352-2 electronics. Key Code 3-53.

Pentagon 1100 duplicating system, new, cassette to cassette, (Master-11 slaves) 30 ips, $\frac{1}{2}$ trk 2 ch, accutrack metering, bias check, motion sense, audio select level control, lighted push button switches, model selector switch, track select, dust covers and alignment tape included. List: \$7000, your cost: \$4500, save \$2500, call or write, Gary Hovanec, 1258 Pickwick Pl, Flint MI 48057, (313) 233-3002 aft. 2 pm EST.

Ampex AG-350, 2 tk. Key Code 3-57G.


FULL COMPASS SYSTEMS

Otari reel to reel full track, 2, 4, 8, 16 and 24 track and highspeed duplicators. Available from Full Compass Systems, 6729 Seybold Rd, Madison WI 53719. 800-356-5811

Scully 280, 2 Ampex AG600, all excel. cond. Key Code 3-59.

Metrotech 552A, 4 trk, 96 hrs per 3600 ft of tape, excel cond, shipping included. Key Code 3-68A.

Ampex 300/350 head stacks & housings, gd cond (2), orig. part of 3200 duplicator w/FT erase, $\frac{1}{2}$ tr V & L heads. Key Code 3-22.

Ampex PR-10 circuit board & faceplate. Key Code 3-22.

Otari MX 5050 FLT, prof. model tape-recording unit, full trk mono, reel-to-reel, excel. sound reproduction, own set-up for editing, wood finish. Key Code 3-10A.

Scully 280-2 with console, ATL gd cond, \$1800. Audiotechniques, 652 Glenbrook Rd, Stamford CT 06906. 800-243-2598.

Ampex 601-2 recorder/reproducer, $\frac{1}{2}$ trk stereo, low hrs, no bdct use, needs belts, otherwise mint cond, in portable case. Key Code 3-65A.

Sankyo STD 1700 front loading cassette deck, new head, needs alignment. Key Code 3-69C.

Akai X-355, $\frac{1}{4}$ trk reel to reel. Key Code 3-53.

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

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

Ampex AG-440-B in console, 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.

Ampex slant console for 350 transport, adaptable to any 19" equip. Key Code 3-22.

Ampex AG350 recorders, solid state electronics, recently rebuilt. Key Code 3-28.

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

Magnacord, rack mounted model 1022, $\frac{1}{2}$ trk, stereo, gd cond. Key Code 3-43B.

Ampex 400 series transport. Key Code 3-22. **Ampex 600**, tube type, (2) 1 in case, 1 with 19" rack mount. Key Code 3-30.

Teac Tascam 702-703A series 70, $\frac{1}{2}$ ", 4 trk audio tape recorder. Key Code 3032.

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

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

Ampex, Soundcraft, RCA, $\frac{1}{2}$ " tape, 7200', 14" reels, unused/sealed. Key Code 2-24C.

Ampex 300-2 in console, gd cond. Key Code 2-25.

Magnacord MD-1000 duplicator master & 1 slave, 2 trk stereo will accept 8 slaves, 7 & 15 ips in equipment rack, excel. cond. Key Code 2-36.

Sony TC-850, quarter trk w/2 trk switchable playback head, 15-7 $\frac{1}{2}$ -3 $\frac{1}{4}$ ips, closed loop dual capstan servo; transport, 10 $\frac{1}{2}$ reel capacity, front bias switch, owners tech manuals. Key Code 2-52C.

Ampex AG-440C-2 recorder, used 30 hrs, still in warranty, best offer. Key Code 2-53.

Teac/Tascam 7010 tape machine 10 $\frac{1}{2}$ " reel, 2 trk rel. playback, rack mount transport & rec. amp. separate for console mt. excel. cond. Key Code 2-52G.

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

3M M64 2 trk recorders in console, excel. cond. Key Code 2-25.

Ampex 300-4SS in console, gd cond. Key Code 2-25.

Pioneer RT-707 rack mount auto-reverse tape machine. 7 $\frac{1}{2}$ x 3 $\frac{1}{4}$ quarter trk stereo, 3" motor deck, bias & eq. switches, mic, line mixing etc, 2 mos. old w/box & manuals. Key Code 2-52D.

Ampex 354 stereo 2T, reconditioned, \$1095. Autodyne, Box 13036, Orlando FL 32859. 305-855-6868.

Ampex AG-350, 2T stereo, 7 $\frac{1}{2}$ -15, rebuilt, like new, \$2250. Autodyne, Box 13036, Orlando FL 32859. 305-855-6868.

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

Tascam 40-4, new parts available cheap, heads, motors, belts, etc. Key Code 2-52.

Ampex 601, case. Key Code 2-61.

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

Ampex 602-2, near new condition. Key Code 2-70A.

Ampex 351-2 w/inovonics electronics, gd cond. Key Code 2-25.

Ampe AG-350-2, AG-300-2, AG 300-1, 3M-79-2, Revox A77-2, AG 440-2, Scully 280-4. Key Code 2-54.

Otari MX-5050B stereo tape recorders, new, in original shipping containers, immediately available. Key Code 2-56.

Teac A-3340S reel to reel w/4 ch. simul-sync, new. Key Code 2-58.

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

Ampex or Ashland capstan drive motors hyst/sync for Ampex 300 or duplicators model 3200. New. #4030137-07. Key Code 2-65C.

Electro Sound ES-505-C new, never used, 2T stereo, 7 $\frac{1}{2}$ -15, w/console, sel-sync, test oscillator, motion sense, automatic gate activation, and record head idler options. Cost \$5000. Our price \$3995. Autodyne, Box 13036, Orlando FL 32859. 305-855-6868.

Metrotech 543R reel-to-reel recorder, excel. cond, 10 $\frac{1}{2}$ " reels, 3 $\frac{1}{4}$ -7 $\frac{1}{2}$ ips, 2 trk stereo. Key Code 2-44A.

Tape-a-Thon Librarian dual deck, large reel, 1 $\frac{1}{2}$ ips, auto reverse, automatic music intermix programmer, like new, designed for background music systems. Key Code 2-59A.

Ampex 350 mono, $\frac{1}{2}$ T, reconditioned, \$995. Autodyne, Box 13036, Orlando FL 32859. 305-855-6868.

Ampex 8 trk master recorder, Maganacord 728, and Magnacord 1028. A. Papa, 213-768-4604 or 213-399-9069 or J. D'Anastasio, 609-424-2352 or 215-546-1808.

Uher 9500 slow-speed logger, $\frac{1}{2}$ trk, 7 $\frac{1}{2}$ -15/32 ips stereo or 4 mono chs, \$300. C. Coleman, KGAB, Box 5053, Ventura CA 93003. 805-647-0634.

Ampex 402 tape recorder, very good cond, with or w/o console, \$395 or best offer. P. Willey, WMNB, 466 Curran Highway, N. Adams MA 01247. 413-663-6567.

Want To Buy

Ampex NCI-13 and 14 reel motors. Key Code 4-69.

Ampex 351 AME electronics. Key Code 4-69.

Ampex md1 200 orig head assem, also 2 portable cases for Ampex 400 or comp. port. 400. Key Code 4-22.

Ampex 300 15 ips reel idler. Key Code 4-69.

Berlant/Concertone models 20/20, twr 1 or 2, BRX 1 or 2, BAX, BR, 30 series, any cond, working or not, for parts. Key Code 3-78.

Ampex 351 mono full trk, 7 $\frac{1}{2}$ /15 ips. Key Code 3-72.

Revox, any reel-to-reel tape recorder. Key Code 3-38.

Ampex AG-350-2, $\frac{1}{4}$ 2 trk, 7 $\frac{1}{2}$ /15 ips, working cond. Key Code 3-78.

Ampex 440 or 440B, 1 or 2 trk, prefer transport only, will take electronics if necessary, must be in excel mech and cosmetic cond. Key Code 2-45.

Reel to reel recorder, playback for 5KW AM station. Key Code 2-7.

CATV-MATV EQUIP.
Want To Sell

Cadco ch. 20 to ch. 8 converter. Key Code 3-26.

Cadco ch. 20 dish antenna w/pre-amp, used 1 yr. Key Code 3-26.

Cadco ch. 10 to ch. 13 converter. Key Code 3-26.

Cable L.O. equip, prod, playback, editing, tapes, etc, lost our lease. Key Code 3-74.

Jerrold PBF-5 pass band filter, in excel cond. Key Code 2-63A.

Jerrold UVC convertor ch. 16 to ch. 4. Key Code 2-63.

Jerrold ACR-712 high band aural carrier reducer. Key Code 2-63.

Jerrold 1435A-7 single ch. trap. Tuned to ch. 7. Brand new. Key Code 2-63B.

D.B.C. TS-010D ch. progressors w/VPS-20 10watt finals, Ch. 2-8, 4-10, 6-12. Also 1 VPS-10 Ch. 7. Key Code 1-61.

Finco G-144, UHF broadband amplifier, new, never used. 45db gain, 75 ohms input and output. Key Code 1-73A.

Want To Buy

120° Kelvin or better LNA & Horn, also freq angle rcvr for college students ant project. Key Code 4-48.

M.D.S. commercial down-converter with antenna. Key Code 3-40.

CONSOLES
Want To Sell

Gates Stereo Executive 10 ch solid state, excel cond. Key Code 4-65.

Peavey 8 ch. stereo board modified for 8 trk recording. excel cond. Key Code 4-52.

Shure SR 101 console. Key Code 4-46B.

Microtrak complete System D stereo mixer, TT's, cabinetry, excel cond, 1 yr old. Key Code 4-67A.

Altec 1220, 10 in mixer w/reverb, monitor mix, limiter, in flight case. Key Code 4-34.

Ramko 8 ch. stereo console, 32 inputs, includes interface for TT & tape remote starts, less than 2 yrs old, includes built-in digital clock and timer. Key Code 4-30.

Altec 9300 console, 16 input x 16 output, echo send/receive, eq. pre & post, XLR input & output. Key Code 4-78A.

Sound Workshop 1280B, new, reasonable. Key Code 4-31.

Altec 250T3 prod console, 8 rotary mic inputs, 4 stereo rotary line inputs. Key Code 4-78B.

RCA Audio console, old, no schematic, but in gd cond, eight ch plus master, Daven attenuators. Key Code 4-32G.

Gates Stereo Yard. Key Code 3-53.

Shure M675 bdct prod master used only two months, excel cond. Key Code 3-55.

Ampex MX-10 for parts

The Exchange

CONSOLES ... WTS ... CONTD.

Gates four channel solid-state mixer, Producer, excel. cond. Key Code 2-12.

Speck SP800-C, 16 in, 8 out, 16 direct outs, parametric eq. 3 cue or echo sends, plus 4 pro level, 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, headphone, mixer panel, amp, meter, bridge & power supply, 101 low imp. mic inputs, complete. Key Code 2-52E.

Melcor pre amp equalizers, HW600 faders, available as system or parts. Key Code 2-54.

Quad-Eight 2082 console, 20 in, 16 out, super versatile, w/new electronics. Key Code 2-33.

Harris stereo 80 power supply, excel. cond. Key Code 2-41E.

Stevenson Interface Series 100 Board, 16 input frame, 9 in, 4 out w/compression mod. A. Papa, 213-768-4604 or 213-399-9069 or J. D'Anastasio, 609-424-2352 or 215-546-1808.

Ampex AM-10 Mixer, excel cond., \$395. Autodyne, Box 13036, Orlando FL 32859. 305-855-6868.

Ampex MX-35 Mixer, excel cond., \$195. Autodyne, Box 13036, Orlando FL 32859. 305-855-6868.

Spotmaster Consoles, new. Send for literature. Best package prices on trade-in surplus equipment. Autodyne, Box 13036, Orlando FL 32859. 305-855-6868.

Want To Buy

Pultec 4 ch. line mixer. Key Code 4-69.

Stereo 5-ch board, at or near junk cond. Sparta, or similar, any brand for parts. Key Code 4-41.

Stereo broadcast consoles, one or more with 4 or 5 inputs, one with 5 or more, all with stereo output. Key Code 4-42.

Solid State Console, 8 mixer stereo. Key Code 4-19.

Stereo console, 5 or 6 channel, in gd cond. Key Code 3-64.

Stereo console in working cond, for new FM. Key Code 3-2.

Altec 230B. Key Code 3-21.

Collins 212B. Key Code 3-21.

Audio console, 6 input or more, stereo, any make, tube or note. Key Code 2-5.

Audio console, 8 ch or more, mono/stereo. Key Code 2-38.

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 10S350 vertical fader, 10 mixer dual ch. Key Code 2-63.

DISCO & SOUND EQUIP.**Want 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 cabinets, (pair). Key Code 4-74C.

Quad Eight RV-10 variable decay reverberation unit. Key Code 4-72A.

Sonn (2) 115 RH bass speaker cabinets, like new, excel. cond. Key Code 4-52.

Sensory-System custom built studio monitor speakers, 2-way system w/all Altec components, including active Altec crossover, sell as pair only. Key Code 3-65C.

Tascam 5 & 10 consoles, 8 trk and Ampex 2-trk, microphones, noise reduction system, limiters, compressors, everything. Key Code 3-35A.

Ampex & Scully recorders, 16 in 16 out console, complete recording studio, & all related equipment. Key Code 3-41H.

In the U.S. call 800-336-3045
For any Key Code Names and Addresses.

Portable Disco Console contains 2 Telex Viking ½ trk stereo tape players, mixer w/2 mic and 2 phone/tape head inputs and headphone cue system. Key Code 3-1A.

Hammond B-3 modified for road use. Key Code 3-77A.

Altec 811B sectoral horns, no drivers, sell as pair only. Key Code 3-65D.

Delta Lab DL-1 Stereo Digital Delay Line, new, \$1000. Audiotechniques, 652 Glenbrook Rd, Stamford CT 06906. 800-243-2598.

JBL 075 ring radiator, 2 to a box & twist lock connectors. Key Code 3-77B.

JBL 2440 drivers. Key Code 3-77.

MXR digital delay, brand new. Key Code 3-63A.

Yamaha P-2200 power amplifier, new, 230 watts into 8 ohms, XLR input connectors, new, \$700. Gary Hovanec, (313) 233-3002, after 2 pm EST.

Fairchild 662 pre amp cards (20). Key Code 3-63B.

Emilar EH800 horns (12), like new. Key Code 3-34B.

LP Jacket Fabricating Plant, or will trade for electronic gear or video. Key Code 3-41A.

Burwen DNG 1100 noise reduction unit, prof model w/XLR connectors. Key Code 3-73A.

JBL 2350 (4) 90° radial horns. Key Code 3-77.

DBX model 187, noise reduction system, like new cond., 4 ch, switchable record or play, \$900. Gary Hovanec, (313) 233-3002, after 2 pm EST.

Altec 605, 15" two-way, just like 604. Key Code 3-57L.

Fairchild 664 equalizers. Key Code 3-63C.

Voice of the Theater copies (2), better made than Altec's A7's, includes Altec LF driver and E-V HF driver, sell as pair only. Key Code 3-65B.

Peavey CS 800, 400 watt per ch. or 800 watts in mono, great for stereo disco. Like new. Key Code 2-12.

Cassette tape portable disco mixer, w/2 cassette units, mixer, EQ, and output metering, 2 mix inputs, not fancy, just works. Key Code 2-14.

Urei digital metronome 963, like new. Key Code 2-33.

EXR type aural exciter, brand new, still in box, can be used in FM bdct. Key Code 2-33.

Harmon-Kardon Citation 12, 120W, power amplifier, solid state, excel. Key Code 2-14.

Fairchild Reverb II 659 very smooth spring echo. Key Code 2-33.

Big Brute mike cables, eleven 25', Switchcraft XLR's. Key Code 1-22E.

Hammond B-3, chopped for road use. Key Code 1-2A.

Cerwin-Vega GE-2 graphic equalizers (2). Key Code 1-22F.

Rack locker, 6'. Key Code 1-22A.

A/DA Flanger, new w/powr supply. Key Code 1-14A.

Voice of the Theater copies with Altec drivers, horn and crossover (800 Hz). Sonically fine, cabinets rough. Key Code 1-62A.

Rack locker 6½'. Key Code 1-22B.

Maestro Phase Shifter w/3 position foot pedal. Key Code 1-14B.

Acousti-Log Digital Reverberation Timer. Key Code 1-62B.

Shure mixers, RTS patch panels, Auratone speakers, Dynaco preamp, Dynaco amplifier Lafayette headphone. Lafayette generator, (2) Fisher reverb chambers, (3) metal 19" racks, Altec studio monitor loudspeaker in cabinets, (2) direct boxes, (4) headset boxes, microphone snake plus cables, Harmon cassette, Garrard turntable, (2) Magnecord PT-6 w/cases. A. Papa, 213-768-4604 or 213-399-9069 or J. D'Anastasio, 609-424-2352 or 215-546-1808.

Want To Buy

EMT 140 reverb plates, mono or stereo, EMT gold foil reverb, Pultec EQP-1, MEQ-5 tube type, Teletronix LA-2A limiters. Key Code 4-74.

Altec 604's or 515's, blown, must be reasonably priced, also blown Altec or JBL hi-freq drivers, large or small. Key Code 4-49.

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

Reverb, reasonable. Key Code 2-5.

Electro Voice #700 or #800, (Patrician) spk system, working cond. Key Code 3-78.

Eventide harmonizer, Eventide flanger. Key Code 2-39.

LIGHTING EQUIP.**Want 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, 2000 watt fresnel spotlights (4), 5000 watt fresnel spotlights (2), 4.0 copper cables, 300' in sections w/pin plugs, 2 large stage plug transformers, converts 220V to 110V, used w/above cable. Key Code 12-40.

HELP WANTED

Maintenance Engineer: Background in TV transmitter maintenance, studio maintenance desired. Station located in the heart of Wisconsin vacationland. Submit resume and salary requirements to Chief Engineer Ned Westman, WAEO-TV, P.O. Box 858, Rhinelander, WI 54501. An Equal Opportunity Employer. (715) 369-4700.

EMPLOYMENT CLASSIFIED**POSITIONS WANTED**

I am seeking a radio position in Spanish radio stations in Chicago, Los Angeles, San Francisco, New York, Texas, Delaware or any place with Spanish population in United States. Have 15 years of Radio experience. Resumé and tape later. Send replies to Frankie Rodriguez, Box 1361, Yavco, P.R. 00768.

Experienced educational announcer looking for break at AOR or progressive station. College graduate, would prefer New England area. Will send resumé and tape. Jay Grandmont, 11 Dean St, Taunton MA 02780, 617-822-4915.

Current Chief Engineer wants to work with Christian radio. Must be ministry oriented. Degree. Also several years on-air. John Hutcheson, Rt. 1, Box 238Y, Homesassa, FL 32646, 904-628-6766.

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

POSITIONS WANTED

3 yrs Radio experience, D.J., Studio Control, News, Sales, Sportscaster. Looking for full-time employment, currently working part-time at New Jersey based M.O.R. stations. Looking for employment in New Jersey, New York, Penn., or Cleveland, Ohio area. Tape available. Send replies to: Box 91, Stirling, New Jersey 07980.

Want To Buy**LIMITERS****Want To Sell**

Urei LA-3A, excel cond. Key Code 4-75C.

Urei LA-3A audio levelers (4), gd cond. Key Code 4-14.

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, series 2350, gd cond. Key Code 4-14.

Spectrasonics model 610 Complimitters, 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.

DBX RM-160, new, Symetrix CL-100(2), new, reasonable. Key Code 4-31.

C.B.S. Laboratories 4440 Audiomax and C.B.S. Laboratories 4110 FM Volumax, factory rec'd. Key Code 4-73.

C.B.S., newer Thomson FM Volumax 4111, excel cond. Key Code 4-51.

CBS FM Volumax 4110, excel cond. Key Code 4-7A.

ITA LA-1B limiting amplifier (2). Key Code 3-53.

Spectra Sonics complimitter model 610 factory checked an calibrated to specs. Key Code 3-54.

Gregg Labs tri-band limiter and AM peak limiter combo #2431/2612, like new, w/manual. Key Code 3-4A.

Urei LA-2A limiters, new. Audiotechniques, 652 Glenbrook Rd, Stamford CT 06906. 800-243-2598.

Urei 1176B. Key Code 3-57C.

RCA limiter BA-6A, ML-11225B like new. Key Code 3-45.

Universal audio compressor limiter LA-5. Key Code 3-32.

Gates 3924B, tube limiter, w/schematic. Key Code 3-65E.

Stromberg-Carlson AN-GSA/33 limiter compressor, 4 units and power supply in one rack mount, with schematic. Key Code 3-65F.

CBS FM Volumax, connected stereo pair. Key Code 3-66A.

Urei BL40 modulimiter w/polarity controller, manual, 1 yr. old. Key Code 3-51A.

CBS 4450 Audimax AGC unit, stereo. Key Code 3-12.

Shure M-62V Level-Loc limiter. Key Code 3-6

The Exchange The Exchange The Exchange

LIMITERS ... WTB ... CONTD.

Audimax stereo model 4450-A. Key Code 4-55.

Gates Sta-Level (2) and/or **Gates** 39-B or equiv peak limiter, any cond or junk, or any model, age of equip not important. Level-Devil type apparatus. Key Code 4-41.

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

DBX 162, stereo comp/limiter. Key Code 3-8.

Urei BL40 modulimiter in gd cond. Key Code 3-13.

Automated Processes 525 compressor/limiters, need 12 in any cond., new or old. Key Code 3-8.

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.

Synchron, AV-7A's (2), one new, excel cond, one older for parts, w/cables and pwr supply. Key Code 4-51.

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

AKG 414 EB mikes, new, reasonable. Key Code 4-31.

Shure SM-33 "Johnny Carson" mic., needs ribbon. Key Code 4-1A.

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

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

Shure (2) SM-81, new, reasonable. Key Code 4-31.

Sennheiser cond mikes, Moviola Pix. Key Code 4-22C.

FULL COMPASS SYSTEMS

Tascam, BGW, Orange County, Edcor, Inovonics, Orban, Urei, Delta Labs, Technics, dbx, Lexicon, Eventide, Strand Sound, and Tapco. All available from Full Compass Systems, 6729 Seybold Rd, Madison WI 53719.

800-356-5811

✓ **Sennheiser MKH-404** condenser mic and cable, less P.S. "as is". Key Code 4-1C.

Sennheiser MKH 816T shotgun, mic w/windscreen. Key Code 3-57M.

Altec 656A cardoid dynamic (3), as is. Key Code 3-65H.

Shure 588SA, new cond. Key Code 3-46.

AKG 451 (4) w/CK1 capsules. Key Code 3-15B.

E-V 1711 cardoid condensers (2), as is. Key Code 3-65J.

AKG 414 (2). Key Code 3-15C.

Sony ECM-22 condenser cardoid, as is. Key Code 3-65K.

Sony C-37 microphone and power supply. Key Code 3-53.

Sony C37A. Key Code 3-57D.

Sony C17B. Key Code 3-57E.

✓ **39B** mikes (2). Key Code 3-43A.

Shure SM61 in gd cond. Key Code 3-76.

Neumann KM86. Key Code 3-57F.

Electro Voice RE-20 (4), new; **Neumann U-64** w/power supply (4); **Sony, AKG, RCA** mics. Key Code 3-41G.

RE-10 mikes (2), and one 635A, new, still in manuf. unopened box. Key Code 2-56.

Sennheiser MD 421 U(2), new. Key Code 2-64.

RCA DX77, used, in gd cond. Key Code 2-64. U-48, ECM-22, MD421-U-DIN, KM54, KM86, KM85, Z-48 (U-87). Key Code 2-54.

Shure SM33, and Shure SM 61, new and nearly new. Key Code 2-64.

Shure SM-54 mikes, gd. cond. Key Code 2-3A.

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.

✓ **Sony ECM-33P** (8) new, studio electret condenser microphones, battery or phantom powering. Key Code 2-52B.

AKG D1000E, new. Key Code 2-64.

Electro Voice RE 15, Re 11, 666 (4), 664 (2), Shotgun, mike stands, and booms. A. Papa, 213-768-4604 or 213-399-9069 or J. D'Anastasio, 609-424-2352 or 215-546-1808.

Want To Buy

Neumann M49, 249, U47, U48, U67, M50, 269, SM-2, KM53, KM54, KM56, 256, KM63, KM64, KM66, KM84, KM86, U87. **AKG C-12, C-12A, C-24**. **Telefunken M-251** and **VF-14** tubes for U47-48. **RCA 44, 77DX, BK-5, 10001-KU3A**. **J. Mandel, Triton Prod, 38 Brooks St, Brighton MA 02135. 617-787-2220.**

Sony ECM-21, C-55, C-55P, ECM 63, ECM 33, C-22. **ECM-22**, microphones. Key Code 4-31.

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

Sennheiser, need 2 each MD421 and 2 each MD441. Key Code 3-8.

Altec 639-B, **RCA BK-5**, **RCA 44**, **RCA 77DX**, **RCA BK-11**, or any ribbon in working or repairable cond. Key Code 3-78.

RCA 44 series, cosmetics more important than workability, also looking for vintage desk stands, name plates, and accessories. Key Code 3-80.

AKG414, need 2 in good used cond. Key Code 3-8.

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

RCA 77 series ribbon mics, blown. Key Code 3-34.

RCA Type 77-D (MI-4045-B) and/or **RCA Type KB-2C** (MI-11001). Key Code 2-47.

Telefunkin U47 tube type microphones or **Neumann KM47** tube type, **Shure 57's**. Key Code 2-33.

RCA boom stand type KS-3A (MI-4094-B). Key Code 2-47.

RCA KU3A (MI-10001-A) needed for parts recovery. Key Code 2-47.

MISCELLANEOUS

Want To Sell

✓ **UHF/VHF varactor tuners**, solid state TV IF strips, etc. Key Code 4-77.

Rack, 1-6', 1-7', both in gd cond. Key Code 4-33.

Mod transformer, gd for 1600 watts, to match 4-400's to pr. of 810's in modulator. Key Code 4-16.

Switchcraft jackfields, several, new, unused. Key Code 4-76.

Racks (2), accommodate 2 and 3 decks, with switching gear. Key Code 4-64.

✓ **Exel printer**, excel cond ribbon-less, uses ink treated paper or multicopy. Key Code 4-7B.

Wilkinson FM transmitter power amplifier tuning bar, also air blower. Key Code 4-75.

PCS Belden 9741, 250'(2), 12 pr, 18gauge, all sep insltd, control purposes. Key Code 4-2.

GE filament transformer, 115 VAC primary, 6.3 VAC (3 sec windings), secondary 0.0259 kva. Key Code 4-60F.

RCA BTF-10B transmitter tubes, unit is out of svrs, tubes are brand new, sell or swap for cart machine. Key Code 4-24.

Belden 9776, 100' roll, 18 gauge 12 pr. **Beldfoil-Shielded**. Key Code 4-2.

Rack cabinets, 19", hold one 8½" panel, gd cond. Key Code 4-70.

✓ **Equipment racks**, patch panels, patch cords, assorted tape decks, and audio amplifiers, any reasonable offer. Key Code 4-65.

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

GE voltage stabilizer. Key Code 3-53.

✓ **Exel Printer**, excel. uses ink, impregnated paper. Key Code 3-16B.

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

Supply, 12 volt, 50 amp DC. Key Code 3-53.

Collins power supply 409U2 (tube type). Key Code 3-72.

Garner 105 (bulk tape eraser), new, \$700. Gary Hovanec, (313) 233-3002, after 2 pm EST.

Western Electric 20 B2 power unit. Key Code 3-53.

Power disconnect switch, 3 phase, 4 pole, 400 amps, excel cond. Key Code 3-60.

Monroe Billing Machine, input/output typewriter unit & electronic processing unit programmed for radio station billing. Key Code 2-2A.

RCA audio patch panels, double row, R-T, double plug. Key Code 2-11.

PAS-5 electronic binoculars, IR for night vision, excel cond. Key Code 2-55E.

Want To Buy

Catalogs on pre-1960 **RCA**, **W.E.** and other bdct equip, also microphone stands for pre-1960 **RCA** & **W.E.** Key Code 4-22.

RCA MI-21200 plate current & calibration meter, also **TK-11 lenses & transistor preamp**. Key Code 4-1.

RCA catalogs & instruction books, **Audio & Video**, **RCA Bdct News** from 1950's & 1960's. Key Code 4-1.

RCA bdct catalogs, sales brochures, wanted, or borrow same to copy, both audio & video. Key Code 4-6.

20-25 KW water cooled, dummy 50 ohm load, 3" fittings. Key Code 4-48.

Starlight Scopes, types AN/PUS 2, 2A, 3, 3A etc. Top dollar paid. Key Code 2-55.

MONITORS

Want To Sell

RCA frequency monitor. Key Code 4-32D.

HP-335B tuned to 91.5 MHz. Key Code 4-53.

McMartin TBM-3500. Key Code 4-68A.

McMartin TBM-3000. Key Code 4-68B.

Radio Engineering Labs, model 600-A modulation & FM frequency monitor, gd cond. Key Code 4-41.

Gates 4990 frequency monitor w/manual. Key Code 4-3A.

✓ **McMartin FM TBM 3000 freq. monitor**, **McMartin TBM 3500 modulation monitor**, **Gates AM #2639 frequency monitor**. Key Code 3-11.

McMartin AM RF amplifier, factory tested, presently tuned to 810 kHz, excel cond w/manual. Key Code 3-25.

✓ **Harris GTM 88S** stereo modulation monitor w/GTA-19, 19 kHz pilot freq. monitor, in service 107.1 MHz w/manuals. Key Code 3-25.

H.P. 335B FM monitor. Key Code 3-53.

Gates AM-80 modulation monitor, recently factory calibrated, gd cond. Key Code 3-42.

Visual MF1A frequency monitor. Key Code 3-72.

McMartin TBM 3619 pilot frequency monitor. Key Code 3-53.

Nems-Clarke type 112 phase monitor, set up for three towers. Key Code 3-46.

GTM-88M FM mod monitor, M5693 AM mod mon, **GTM-88F** FM and M4990 AM frequency monitors, all gd cond. Key Code 3-59.

Collins 900- F1 SCA frequency modulation monitor, gd cond. Key Code 2-10B.

General Radio 1931A, gd. cond. Key Code 2-41A.

Harris FM stereo FT-80/FS-80, excel cond. Key Code 2-41B.

McMartin TBM-3000 FM frequency monitor. Key Code 2-61.

Harris GTM-88R FM RF amp (tunable). excel cond. Key Code 2-41C.

Collins SCA monitor (modulation & frequency), solid state, gd. cond. Key Code 2-41D.

Gorman-Ridlich EBS monitor, encoder/decoder, like new. Key Code 2-12.

Gates frequency monitor, model M4990. Key Code 2-61.

GE BM-1A mono FM frequency & modulation monitor w/manual on 95.9 MHz, \$100. C. Coleman, KGAB, Box 5053, Ventura CA 93003, 805-

The Exchange The Exchange The Exchange

RECEIVERS ... WTS ... CONTD.

RCA solid state 450-470 MHz base station transmitter & power supply, like new. Key Code 4-77.

G.E. Master Exec. all transistor, 80 watt Base Station with remote chassis and T1200 remote, 150-174 MHz, has tone, \$1500. Dan Uzzell, Alpha Studios, 1700 E 12th St, Austin TX 78702. 512-472-6151.

Elco HF-32 receiver. Key Code 3-53.

GE transmitter-receiver MT 42N8. Key Code 3-53.

Two way 30-75.95 MHz FM, 920 chs, runs on 12-15VDC and 3VDC. Key Code 2-55B.

R-390A receiver, to 32 MHz, 32 bands, excel cond. Key Code 2-55C.

Astro Com Labs System, 30-1000 MHz, AM, FM, CW, Video w/SDU, ready to use. Key Code 2-55D.

Military type R-808 receiver 2-32 MHz w/built in TTY converter. Key Code 2-55A.

Want To Buy

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

UHF - FM two or five watt handheld transceivers for use in the 450-460 MHz frequency range. Key Code 4-59.

Motorola VHF HT220, all models, need Slimlines or Omni multi ch units, w/without "PL", need accessories also, cond no matter. Key Code 4-16.

Motorola Hi-Band HT-200 portable, old 960 or higher equipment. Key Code 12-57.

REMOTE & MICROWAVE EQUIP.

Want To Sell

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

Lenkurt Model 76 STL receivers (2). Fully solid state, 5.925-13.250 GHz. Easily returnable. Includes Audio Subcarrier Demods, power supplies, IB and waveguide, \$1600 each. Complete units. Dave Castellano, Capitol Bdct Exchange, 3469 W Benjamin Holt Dr, Ste 525, Stockton CA 95207. 209-957-1761.

Moseley PCL 303C composite tuned for 950.0 MHz and Scalla 950 antennas. Key Code 4-75.

Moseley PCL-404 STL transmitter/receiver on 949 MHz, factory recond 1978, like new. Key Code 4-62A.

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

Marti SCA telemetry link for use with STL system. Key Code 3-12.

Microwave System, 2 hop, 2GHz, complete w/dishes and other related accessories. Mint cond. Key Code 3-60.

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

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

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

Marti STL-8 systems (2), dual ch/stereo, 950 MHz band, excel cond, in use, used 18 mos, less antennas and feedline. Key Code 3-12.

Moseley 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 portable transmitters & receivers, audio channel. Key Code 2-30.

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

Continental Elects. transmitter (2) remote control unit, will operate two xmtr's each, gd cond. Key Code 1-8.

In the U.S. call 800-336-3045
For any Key Code Names and Addresses.

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

Moseley RRC-10, remote control units for use w/26KHz STL System, needs tubes, \$450. C. Coleman, KGAB, Box 5053, Ventura CA 805-647-0634.

Moseley PCL-303 STL transmitter/receiver with remote control tuned to 950 MHz. Key Code 1-76.

Rust Model 108-D remote control system, 24 ch, worked when removed. Key Code 1-54.

McMartin TBM-3000 FM frequency monitor. Key Code 1-74.

Gates Model RDC-10 w/manual. Key Code 1-29.

Schafer 400R transmitter remote control unit, gd cond, w/manuals. Key Code 1-8.

Want To Buy

Moseley remote control for AM, must be in gd cond. Key Code 3-38.

Marti M-25C/MR-30, 150-170 base station or M-25C transmitter module. Key Code 3-46.

Moseley or Marti, 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 2-34.

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

STEREO GENERATORS

Want To Sell

CCA SG-1D stereo generator, will work with almost any FM exciter, excel cond, 9 yrs old. Key Code 4-76B.

Wilkinson SG1E stereo gen, excel cond. Key Code 4-75.

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

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

Wilkinson SG1E stereo generator, excel cond. Key Code 4-55A.

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

Gates FM TE-3 exciter-stereo generator 91.5 MHz. Key Code 3-53.

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

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

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

Want To Buy

Gates M-6095 exciter stereo generator, any cond, any compatible unit will do. Key Code 4-41.

Stereo generator w/without FM exciter, 10 watt. Key Code 2-5.

SWITCHERS (VIDEO)

Want To Sell

Dynair 12X10C Routing Switchers (2), 12 in - 10 out, 0 D.G., 1% D.P. Rackmount includes switches and power supply, IB, fully solid state, \$1100 each. Dave Castellano, Capitol Bdct Exchange, 3469 W Benjamin Holt Dr, Ste 525, Stockton CA 95207. 209-957-1761.

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

3M bridging video switchers (2), 10 inputs. Key Code 3-32.

3M 1114 prod. switcher, ISI chromakeyer accessory. Key Code 3-32.

Shintron 367 Color edit code switcher w/NTSC color genlock, sync generator and effects, like new, low hrs. Key Code 1-44.

Want To Buy

GVG 1600-IT with pre roll or equiv., 16 input air switcher. Key Code 2-37.

Sarkes-Tarzian VIS-75 for parts and/or spare parts (modules) for same. Key Code 2-22.

TAPES CARTS & REELS

Want To Sell

Reels of tape, 10", 16 each TDK S3600P. Key Code 4-37A.

10" reels, over 200, 6-8 hr tapes, gd to excel. cond. Key Code 4-64.

Ampex 641 tape, 1 mil, less than a yr old, used once, no splices on 7" clear reels. Key Code 4-13A.

Reels of tape 10", 16 each TDK L3600P. Key Code 4-37B.

3M 250-1/4"-2400' Blk packed, sealed cartons, 25% less net price, also empty 5" reels and/or boxes. Key Code 4-22.

Audio Cassette Supplies, Soft hinged plastic boxes, 400 per case, \$22 case plus \$3.00 shipping, 3M Hard (clear hylander boxes) 250 per case \$25 case plus \$3.00 shipping (both in case lots only), BASF hard plastic 7" reel storage boxes, lot of 10 \$14.50 plus \$3.00 shipping, (7" reel included), Gary Hovanec, (313) 233-3002, after 2 pm EST.

LBC video tape, 30, 60, 90 min., 2" reels, gd cond. (40). Key Code 3-33E.

Video Tape: scotch 400-2-4950, 2 new; 400-2-2550, 1 used; Scotch 361-1-2800, 6 new, 4 used; 361-1-1400, 6 used; Ampex 161-60, 9 new, 35 used; Memorex 76PON7084BW3, 11 used. Best offer, all or part. R Frazier, WPFW, 700 H St NW, Washington DC 20001. 202-783-3100.

Scotch one inch, one hr videotape, 360-1-3000-R97C87, 5 rolls. Key Code 2-6.

Ampex 1/2" video & instr. tape with 14" alum. reels, cartons included, gd cond. Key Code 2-35.

Karex half inch, one hr videotape, SC2-3, 20 rolls. Key Code 2-6.

Audio recording tape, #206 & 201, 2", 1", 1/4" w/reels & boxes, one or two passes, some splices. Key Code 2-13.

3M 7" empty tape reels for 1/4" audio tape, new cond, with or without blank cartons. Key Code 2-35.

Fidelipac Model 300 loaded cartridges, used but in very gd cond. Total of 560 available. Key Code 2-56.

Memorex 1" video tape on 10 1/2" reels w/plastic carry box, used once, but o.k., 50 reels available. Key Code 2-23D.

Ampex and Soundcraft audio instrument tape, 40 reels of 1", unused/sealed, 7200', 14" reels. Key Code 2-24A.

Scotch one inch, one hr videotape, 461-1-3000-R97B, 5 rolls. Key Code 2-6.

Reels, plastic, empty, 10 1/2" w/small ctr hole. Key Code 2-21.

RCA Instrument tape, 60 reels of 1/2", unused/sealed, 7200', 14". Key Code 2-24B.

Tape reels, many 5 & 7 inch, empty, without boxes, 10¢ each, you pay shipping. G. Hutchins, Hutchins Sound, 34 Indiana St, Bristol VA 24201. 703-669-1737.

Broadcast carts, several Audiopak & Fidelipak, recently removed from service, good cond, 50¢ each. G. Hutchins, Hutchins Sound, 34 Indiana St, Bristol VA 24201. 703-669-1737.

Want To Buy

Transcriptions 16", vert. or lat. pref. band & jazz music. Key Code 4-22.

ET music libraries, old 16", World, Assoc., Standard, Lang Worth, any part, Key Code 2-26.

Easy Listening, country automation music libraries. Key Code 2-26.

TEST EQUIPMENT

Want To Sell

Exact lin/log sweep gen. Key Code 4-72C.

HP 1700B oscilloscope, Tektronix 501 monitor, Heathkit Mod 10-10 oscilloscope. Key Code 4-35.

Hickock 209-A VTVM, very gd cond, with probes & manual. Key Code 4-6A.

EICO 460 wideband oscilloscope, gd cond with manual. Key Code 4-6B.

B&W audio oscillator & distortion meter models 200 & 400, gd cond w/manuals. Key Code 3-76.

Trav-ler Radio Corp. AF 33(038) 29558 audio oscillator. Key Code 3-53.

Hewlett Packard 211A square wave generators. Key Code 3-54.

Tektronix 545 scope, 50 MHz, w/dual trace module. Key Code 3-34E.

Vectorscope 526, very good cond. Key Code 3-60.

Tektronix 527 waveform mon. Key Code 3-52.

Leader LCG-396 Colorbars/Test Signals Generator, new w/warranty (\$1000 list), \$775. SoundDesign, PO Box 921, Beverly Hills CA 90213. 213-276-2726.

RCA WX-2B, field intensity meter for AM radio, fair cond. Key Code 3-60.

Exact lin/log function sweep generator. Key Code 3-77G.

Tektronix RM45A/CA oscilloscope. Key Code 2-70D.

H/P 330B distortion analyzer in carry case. Key Code 2-31B.

Bird 8890, 2500/5000 watt load resistor, 1% EIA flange. Key Code 2-70.

Sencore MU-150 tube tester, excel, factory calibrated. Key Code 2-8.

Byrd 25 KW RF load, wattmeter, water cooled. Key Code 2-11.

The Exchange

TRANS ... WTS ... CONTD.

RCA-250G, fair cond, used as stand by, AM bdct 250 watts, 110VAC, make offer. Key Code 4-41.

Power transformer, 3280VA, secondaries, 3480/0/3480 and 2900/0/2900, 0.72 amp. Key Code 4-8A.

Collins 820-E power choke, Electro Eng works #668-0070-01/E-14299. Key Code 4-2.

Gates M-6095 exciter tuned to 88.3, and another tuned to 103.1 MHz, removed from 50 watt FM transmitters. Key Code 4-41.

Western Electric 10kw transmitter, 508 B-2 mod, needs paint, working when stored, with spares including 3CX10,000 A3 final, 3-400Z drives, manuals, diagrams. Key Code 4-36A.

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

Collins 20V-2 mod xfmr & reactor, mfd by UTC. Key Code 4-2.

Radio Engineering Labs, 518B-DL FM transmitter, 1kw driver plus 10kw amplifier and power supply, gd cond, used as standby. Key Code 4-41.

Electro Mod Reactor #CPN 668-0080-010, Rev C. Ratings, 5KV peak, 30H @ 1.35 ADC/400V peak @ .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, 250/100 watts tuned to 1230 kHz, excel cond, sold w/manuals, spare tubes, complete set of extension meters. Key Code 4-3.

Collins 732-A 1kw re-built FM transmitters (2), \$1600 each less exciter, 25kw dummy load with the purchase of both. Dave Castellano, Capitol Bdct Exchange, 3469 W Benjamin Holt Dr, Ste 525, Stockton, CA 95207. 209-957-1761.

Single phase plate xfmr for CCA FM-1200E transmitter. Key Code 4-68.

Collins 20T, 1KW transmitter w/3 phase converter, gd cond. Key Code 3-72.

RCA BTA 10F transmitter for gd 1 KW standby 850kHz, 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 DFM-15K-B FM transmitter, factory rebuilt w/extras, type accepted to 20KW. Key Code 3-18.

Gates TE-3 Solid Statesman FM exciter, excel cond. Key Code 3-59.

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

Gates exciter, model M6095 stereo. Key Code 2-61.

National NCL-2000 8-10 meter 1 KW output amp, excel. cond, w/book. Key Code 2-9A.

Collins 820D-1 1KW/250W AM, now on air as alternate main, tuned 1490, available now, very gd cond. Key Code 2-29.

RCA BTF-3B, 3KW FM, gd cond, books and spares. Key Code 2-23.

BTA-10G with 5kw cutback and most H modifications, spare parts and manuals. Key Code 2-49.

Plate transformer for Gates BC-1H needs rewinding. Key Code 1-55.

GE TT42A3 TV transmitter, tubes, spares, heat exchangers, water pumps, power supplies, excel cond, Ch. 5, Key Code 1-38.

Ovenaire Solid State contactless Xtal oven for RCA TTU UHF tube type B and B1 exciters. Plug in replacement, eliminates on-air flash. Key Code 1-13A.

Collins Model 20V 1000 watt AM transmitter now tuned to 1460 KHz. Key Code 1-1.

T.T.C. UST-105 100W UHF translator, Ch. 13 input, Ch. 69 output. 1973 w/tube type multiplier, driver & final. Key Code 1-61.

RCA TV Model TTU-10 w/filterplexer, Ch 14, H.P. Freq. Monitor, BW-4 demod, dummy load, fair to poor cond. Key Code 1-57.

RCA BTX-1A, 67KHz sub-carrier generator w/manual, \$300. C. Coleman, KGAB, Box 5053, Ventura CA 93003, 805-647-0634.

Want To Buy

Gates AM transmitter model 250GY in gd cond. Key Code 4-68.

General Electric or similar television transmitter, low band, any age, junk ok for parts. Key Code 4-41.

AM transmitter, 1 KW type approved, high level modulated, in Southeast. Key Code 4-47A.

Collins 830-1D 1kw FM xtr, must be in on-air cond. Key Code 4-19.

AM transmitter 250 to 5,000 watts, junk for parts or rebuilding to standby status, age not important. Also need FM transmitter for same. Key Code 4-41.

FM transmitter, 3 KW or less, tuned to 100.1 MHz, will consider units good for parts only, prefer working equip. Key Code 4-42.

Harris 1kw FM-1H xtr. Key Code 4-19.

AM transmitter, 1KW, must be in gd cond. Key Code 3-38.

Gates, RCA or McMartin, late model 10KW, FM transmitter. Key Code 3-47.

FM transmitter, 2.5kw in working cond, no immediate need, up to 6 mos. Key Code 3-2.

UHF TV station transmitter to tower equipment. Key Code 3-19.

FM transmitter, 250 watt. Key Code 3-20.

FM transmitter, 2 to 3 KW, 92.7 MHz. Also, 1 KW AM transmitter, 1600 kHz. Key Code 2-50.

AM transmitter, 5000 watt, prefer Gates BC-5P or any brand. Key Code 2-7.

FM transmitter, 1KW-3KW used 7 yrs or less. Key Code 2-38.

Transmitter, 40-100 watt, tuned to 89.3MHz. Key Code 2-32.

AM transmitter, 1kw in gd cond. Key Code 2-49.

FM exciter, with or without stereo generator. Key Code 2-5.

TUBES
Want To Sell

GE-673, new (6), 4-125A new (6), sell or swap for cart machine. Key Code 4-24.

Elmac tubes, 4CX1000k (2). Key Code 4-75.

RCA 4CX250B, never taken out of original boxes (4). Key Code 3-42.

3CX1500A7 (2) tubes, one brand new, one abut 1/2 used. Key Code 3-48.

5672's (3) and 4-125's (3), cash or will trade for cart machines, turntables, speakers, studio mic stands, 25 Hz gen, Urei stereo graphic EQ, phono pre-amps, 7/8 or bigger coax, Rohn 45G tower sections, other items. Key Code 3-6.

4-400 transmitting tubes (4), used but serviceable. Key Code 2-8.

Tektronix 564 CRT, new, unused. Key Code 2-35.

Elmac 4-400C, new (4). Key Code 1-78.

Tektronix #154-0562-00 replacement CRT for model 602 display scope. New, in factory carton. Key Code 1-73B.

Sony trinitron color picture tube 470DLB22. Never used \$90. Dan Mulally, KUMV-TV, Box 1287. Williston, ND 58801, 701-875-4311.

25, 30 mil, and 2/3" plumbicon tubes, used in good condition, fair price. Call United Video at 613-741-5554.

Want To Buy

Telefunken VF-14 for U47-48 microphones, Telefunken AC-701. Key Code 4-74.

Tubes OG3 for old RCA 10 watt exciter. Key Code 2-43.

TURNTABLES & LATHES
Want To Sell

Wilkinson stereo turntable preamps (2), model TTP-1-A. Key Code 4-19A.

Wilkinson stereo, solid state preamps (2). Key Code 4-55.

Scully lathe auto pitch, 6 speed Westrex mono F.B., head to amp, excel cond. Key Code 4-22A.

Fairchild 523 variable pitch disc cutting lathes (2), one three speed, one two speed. Complete with microscopes, Grampian mono heads, Gotham amps, suction, extra heated styli, and many blank discs, located in N.Y.C. make offer. Key Code 4-79.

Wilkinson TT-P1-A stereo (2), solid state, preamps. Key Code 4-75.

Gates CB-500, 16" turntables (2) w/arms and preamps. Key Code 4-33.

QRK turntables (2) w/Gray arms, Shure cartridges. Key Code 4-32B.

Gates CB-500, 16" turntables w/2 mono preamps, used 5/6 times, new. Key Code 3-45.

Gates CB-500 turntable, with tonearm, base & pre amp. Key Code 3-30.

Gates 16" turntables (2) w/Gray viscous damped toe arms and cartridges. Key Code 3-11.

Sparta turntable with tonearm and base. Key Code 3-30.

Russo Studio-Pro model B turntable, arm and cartridge. Key Code 3-32.

Rek-O-Cut TR-43H 12" lathe turntable in floor cabinet, no lathe, 3-speed, excel cond. Key Code 2-23B.

Harris CB-1200 (2) w/Gray Microtrak 303 tone arms, gd cond. Key Code 2-41F.

RCA BQ-2B turntables w/Micro-Trak 306 arms (2), in custom built cabinet, many extras, excel cond. Key Code 2-60.

Gates turntables (2) w/Micro-Trak tonearms, model DB 500. Key Code 2-61.

Russo & QRK accessories, reconditioned. call or write for current listings. Autodyne, Box 13036, Orlando FL 32859. 305-855-6868.

Presto 16" lathe turntable for model 6N lathe, no lathe, 2-speed, gd cond. Key Code 2-23C.

Technics SL-1500 MK II, new, includes tone arm, base & dust cover. Key Code 2-41G.

Fairchild 523 variable pitch lathes, one is three speed, one is two speed, both complete w/microscopes, Grampian mono heads, Gotham amplifiers, suction, extra styli and many blank discs. Key Code 2-16.


FULL COMPASS SYSTEMS

Technics Direct Drive SP-10, SP-15, SP-25 and SI-1200 Mk II. In stock and available from Full Compass Systems, 6729 Seybold Rd, Madison WI 53719.

800-356-5811

Micro-Trak Model 303 2" tone arms (8), will sell at cost, in original shipping containers, brand new. Key Code 2-56.

Gates CB 1200 turntable (12") w/Gray tone arm, Shure M44-7 cart & equalized preamp. Key Code 2-31C.

Presto 16" direct drive turntables (2), 2-speed. Key Code 2-23A.

Rusco tables (2) with new idlers and felts plus (2) rebuilt Empire 980 arms. Key Code 1-71A.

Sparta 12" turntables (2) in gd. cond. Key Code 1-58A.

EMT-930ST turntables and arms (2 ea), with new Stanton 500AL carts, less preamps, excel cond. \$790 pair. Cabinets & preamps avail. Autodyne, Box 13036, Orlando FL 32859. 305-855-6868.

Want To Buy

RCA, Presto, Grey, W.E. Fairchild, 16" arms, T.T., carts, also 16" transcriptions. Key Code 4-22.

QRK 12" turntable in good shape. Key Code 3-64.

EMT turntables, preamps, arms, any cond. Key Code 2-26.

Turntables (2) with or without preamps, for production, with arms. Key Code 2-5.

RCA or WE universal mono pickups, equalizers, arms 16", any cond. Key Code 2-26.

Turntables, 12", 2 or more w/o arms, Russo, QRK, Technics preferred. Key Code 2-38.

TV FILM EQUIPMENT
Want To Sell

I.T.V. Lens, 75mm, Cosmicar, F1:1.9. Key Code 4-10.

Kodak Projection Lens Ektanon F12, 3". Key Code 4-10.

WANTED: 16 & 35 mm telecine projectors: Eastman, RCA, Brenkert, GPL, Norelco. **FOR SALE: RCA TK-42 color cameras**, two RCA TR-3, one RCA TR-4, one RCA switcher, two RCA effects generators, one Eldaphor TV projector. Priced to sell. International Cinema Equipment Co., 6750 N.E. 4th Court, Miami, FL 33138 - 305-756-0699

RCA TK-28 color camera, mounted internally to the TP-55 multiplexer. TP-66 projector w/200 hrs and TP-7B slide projector, included is a 6" high steel base to maintain optical rigidity on uneven floors. Key Code 4-12B.

I.T.V. Lens, 150mm. Soligor, F 1:3.5. Key Code 4-10.

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RCA TP15B multiplexer, RCA TP15 extension for TP-7. Key Code 3-52.

Buhl multiplexer, stand and Graflex 16mm sound TV projector. Key Code 3-32

RCA TK26C color film camera. Key Code 3-52.

RCA TP-11C color film chain multiplexer. Key Code 2-9.

Kodak VP-X Super 8 film videoplayer. Transfers Super 8 to broadcast quality $\frac{1}{4}$ " tape. For use with external sync, \$1200 or offer. Jim Ellsberry, 3519 W. 229th St., Torrance CA 90505, 213-326-1769 or 213-466-6464.

Athena 400 16mm telecine projector w/lens, factory refurbished, \$3500. SounDesign, Box 921, Beverly Hills CA 90213. 213-276-2726.

Kodak TVM100A Super-8mm projector w/lens, like new, 10 hrs used, remote controllable, \$1750. SounDesign, Box 921, Beverly Hills CA 90213. 213-276-2726.

Want To Buy

35mm projector w/three or two pull-down to transfer film to video carts. Key Code 3-71.

RCA TP-66 telecine projectors. Need 2 for foreign subscriber. Call BEE at 800-336-3045.

VIDEO PRODUCTION EQUIP.

Want To Sell

BJA System's Chromaton 14, Animation synthesizer for fast, low-cost production. For literature write: Inderwiesen Assoc., Box 7791, Orlando FL 32854.

Advent Videobeam-100, 7' color projection TV, excel cond, very little used. Key Code 4-66.

RCA TG-31 in field case. Key Code 4-53.

RCA TG-2. Key Code 4-53.

Telemet 3200 series video DA's (2), 8 DA's per tray, 4 outputs per video DA, 4 pulse DA's interchangeable also available, includes rackframes and power supplies. \$1100 per tray. Dave Castellano, Capitol Bdct Exchange, 3469 W Benjamin Holt Dr, Ste 525, Stockton CA 95207. 209-957-1761.

Telexecutive with mtg brackets. Key Code 4-53.

Setchell Carlson monochrome video monitor, model 10M915, mint cond. Key Code 4-28.

Chyron III System Font Compose Unit, including Keyboard, Disc Drive, Power Supply, Font Compose Unit, Easel, Camera Sync Generator & Monitor. Key Code 4-56A.

Remote Truck, JBE Olson aluminum body (Grumman), step van style, includes 3 13,500 Btu air conditioners, vehicle has approx 10,000 miles, originally planned for efficient 3 camera/2-AVR-2 system. Circuit breaker power dist 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.

Vidicon pan & tilt head, gd cond. Key Code 3-33G.

CVS 504B Time Base Corrector—Recently reconditioned, \$6,000.
CDL VSE 741 Switcher—12 input, chroma key, \$4,000.
Eastman 250 Projectors—Recently removed from service, ea \$2,000.
Eastman CT-500 Projectors—Optical and mag sound, ea \$1,000.
RCA TP-6 Projectors—Reverse, good condition, ea \$1,000.
RCA TK-27A Film Camera—Good condition, TP 15 available, \$12,000.
RCA 1800 Film Projectors—New, factory cartons, TV shutter, ea \$900.
RCA TVM-1 Microwave—.7 ghz, audio channel, \$1,000.
RCA TR-22 VTR—RCA Hi-band, DOC, one with editor, \$18,000.
RCA TR-4 VTR—Hi-Band, telcomp, editor, \$12,000.
Ampex 1200A VTR's—Amtec, colortec, West Coast location, each \$24,000.
IVC 960C VTR's—Portable model, working good, ea \$4,000.

30 Brands of New Equipment—Special Prices. We will buy your used TV equipment. To buy or sell, call Toll Free 800-241-7878, Bill, Kitchen or Charles McHan, Quality Media Corporation. In GA call 404-324-1271.

3M video distribution amplifier. Key Code 3-32.

Rank zoom & focus control w/o cables, gd cond. Key Code 3-33H.

Gray Eng. Labs time code generator and reader. Key Code 3-32.

RCA XL-100, new, unlimited supply, complete RF circuits and board, video. Key Code 3-56B.

Video Data Systems T-100 character generator. Key Code 3-32.

Custom editing station, console set up for 2 monitors, scope, $\frac{1}{4}$ " recorders and all accessories. Key Code 3-32.

Microtime 2020+ w/Image Plus, velcor, DOC. IVC-7000P w/Canon 10:1 lens. Key Code 3-24.

X Setchell Carlson triple 5 black & white monitor. Key Code 3-32.

CVS-504B time base corrector, digital 3 line bdct quality, full amp-gen lock, advanced vertical, etc. Key Code 2-34A.

RCA 21" master monitor, fair cond. Key Code 3-33F.

Panasonic complete color package, cameras w/zooms, cassette recorder and reel recorder, spec effects gen, phaseshifter, triple monitors, master monitor, cable and more. Also lighting and audio. Key Code 2-20.

CBS Laboratories Mark III Model 8000 Image enhancer, \$3600. J. MacAllister, Tufts Educ. Media Ctr, TV Prod. Dept, 136 Harrison Ave, Boston MA 02111. 617-956-6675.

Central Dynamics, video proc amp, model VA2083, very gd cond. Key Code 2-57.

Telemation Black Burst Generator TVM-400, \$200. J. MacAllister, Tufts Educ. Media Ctr, TV Prod. Dept, 136 Harrison Ave, Boston MA 02111. 617-956-6675.

Vital #PA-1 Pulse Distribution Amplifier w/power supply & rack, \$220. R Smith, Ohio Univ, 1425 Neward Rd, Zanesville OH 43701, 614-453-0762.

Want To Buy

T.B.C., low end to middle price. Key Code 3-14.

VIDEO TAPE RECORDERS

Want To Sell

Recotec VTT series digital timers (2) for Ampex VR-1200 or 2000. Hours, minutes, seconds, frames, up-down counter, \$290 each. Dave Castellano, Capitol Bdct Exchange, 3469 W Benjamin Holt Dr, Ste 525, Stockton CA 95207. 209-957-1761.

Ampex 3000, spare head excel cond. Key Code 4-80.

RCA TR-5 VTR, low hrs, two head wheels. Key Code 4-53.

Ampex VR1200-2000 Capstan Motor with balanced flywheel. Brand new, \$275. Dave Castellano, Capitol Bdct Exchange, 3469 W Benjamin Holt Dr, Ste 525, Stockton CA 95207. 209-957-1761.

Ampex 1100 highband, 1200 electronics, DOC. Key Code 4-80.

RCA TR-50 VTR, Cavec, DOC, Editor, 5000 hrs, two head wheels. Key Code 4-53.

Norelco EL3401-A 1" B&W VTR, with accessories and reels of tape, very low hrs. Key Code 4-6C.

Ampex VR-3000 portable backpack quad LB/HB Color Record, mono playback, no batteries, battery charger(s) are available, currently in use by major prod house, 3 avail. Key Code 4-12.

JVC CR8300 $\frac{3}{4}$ " machines (2) and one RM83V 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 svrs, best reasonable offer. Key Code 4-5.

Systematics VJB-12/VJB-3/VMP-3 automated cassette players with or without tape decks. Christian bdct application. Key Code 2-34.

Sony V02800, VO1600 with RF out. Key Code 2-37.

RCA TR-3 or TR-4 tape recorders, hi/lo b/w, color, 2" similar units at or near junk status, for parts also needed. Key Code 4-41.

Editing System, $\frac{3}{4}$ " videotape, gd cond, all or part. Key Code 4-15.

Panasonic editing unit, complete, would consider other brand. Key Code 3-14.

Sony 1000, 1200, 1600, 1800, 2600, 2800 for use in Christian bdct application. Key Code 2-34.

TR4 in band color (1), ATC color. Key Code 2-37.

Systematics VJB-12/VJB-3/VMP-3 automated cassette players with or without tape decks. Christian bdct application. Key Code 2-34.

Sony V02800, VO1600 with RF out. Key Code 2-37.

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New Listings are in *Italics*.

March FCC

(continued from page 12)

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 who felt that they should have specific categories in the checklist.

ship, 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 WSWG 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 (ie: 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 these 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 AM 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.

DISTRIBUTOR DIRECTORY

The following is a listing of distributors that serve the broadcast industry and who would be glad to help you with any of your equipment needs. Contact any of them directly, or circle the appropriate number(s) on the Reader Inquiry Card and send it to IMAS today. We will forward your request to the distributors, and they will send you their literature or line cards.

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2 TRI PPC-1 portable production console c/w 3 colour monitors, 6 input video switcher,
audio board and power supply to power portable camera. Excellent condition, asking \$7,000 ea.

G.E. TTC-95 Channel 5 XMitter 1961 Vintage retrofitted in 1967 and colorized.

Ampex 352-1's, 1/4" playback tape decks w/solid state electronics. Good condition.

Trenka Conversion 16mm sound camera. Excellent condition.

LDH-1 cameras (3), complete w/10:1 zoom lens, viewfinder & 100' cable.

Tektronix 149 test signal generator.

Matched sets of 2/3" Plumbicon tubes.

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