

DC Hosts NRB Show

by Kathleen Imbema

Washington, D.C. ... The National Religious Broadcasters 37th Annual Convention, which met from January 20-23 at the Washington Hilton Hotel, was in itself a considerable testimony to the economic as well as the spiritual vitality of the religious broadcasting industry. Although more than 100 "electronic ministries" were represented, and almost as many production companies appeared ready to tailor "the Word" to fit almost any ear, equipment manufacturers were scarce. The manufacturers' poor turnout surprised BEE, especially when we learned that religious broadcasters like Rex Humbar are prepared to make initial equipment investments of \$100 to \$200 MILLION dollars in the coming decade.

Although religious broadcasters quickly claim television as their most dramatic medium, it is not the most pervasive. Less than 5% of the T.V. stations in this country are religious, while more than 20% of the radio stations in the U.S. are evangelical. Clearly, religious radio stations represent a significant market for broadcasting equipment manufacturers; however, there was just as clearly not much effort on the part of the equipment manufacturers at the NRB Convention to compete with their various sales pitches for the audience. This audience was only buying one line: salvation. Everything else was just a means to an end.

Among religious broadcasters, few distinctions are drawn between the message and the medium. God commanded his followers to carry His Word; if television and radio are

the media best suited to this work today, then it follows that carrying the evangelical message is their primary function. Similarly, most of the production companies involved in religious broadcasting feel that their sole function is, again, spreading the Gospel. If, through these efforts, they incidentally make a living, or even a profit, that is a secondary consideration and a consequence of their unwavering devotion to their mission. In religious broadcasting, one follows the Lord and makes a living; one doesn't make a living following the Lord.

Although the familiar Sony, Panasonic, RCA, GE, Bogner, Delta, and several other equipment companies had positioned their representatives throughout the crowded hall, their salesmen seemed unusually unassertive, their

presentations weak when compared to the confident merchandising techniques used by companies such as "Precious Products" and "Sacred Sounds," companies which really seemed to understand the Product.

Panasonic concentrated on their video line, systems and individual cameras. Editing and recording machines were also on display, as well as a special effects generator. Low frequency extenders, coaxial cables, cassette loaders and satellite systems were also featured.

William T. Bray, the founder of a new computer service designed to handle small mailing lists, and an ordained minister, told BEE that, "Now is the time to sell equipment to the Christians!" According to Bray, the older, first generation Media Ministry supporters are leaving a great deal of money in their wills to the ministry. The "electric church" will, in turn, be using these estates to facilitate "massive equipment sales" designed to trigger a new evangelical response in the younger 18 to 34 year old generation. The final goal of the media ministry is to send the Christian message around the world 24 hours a day. Bray went on to point out that The 700 Club, in its present, limited attempts, operates a \$40 million plant, and plans to build the most advanced studios and stations in the nation soon.

As the older donor base peaks, Bray foresees the installation of an overseas satellite supported network, a greater need for software, and an

(Continued on page 10)

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DISTRIBUTION AMPLIFIERS

by Bill Ashley/

Vice President, Excalibur Electronics, Inc.

Arlington, VA ... Although they have been around for quite some time, distribution amplifiers have become popular with broadcasters only in the last decade; only recently has modern technology allowed the reduction of cost and complexity to reasonable levels. The basic function of a distribution amplifier is quite simple: it takes an output and feeds it simultaneously to several outputs. Thus, it is almost the opposite of a console, which feeds several inputs to one output. The uses of distribution amplifiers are many, limited only by one's needs and imagination.

Some of the more popular examples are: 1) feeding the output of a production console to several tape and cartridge recorders; 2) feeding an incoming network or other telco line to several studios and/or recorders, making up for line losses at the same time; 3) feeding the modulation monitor to a number of studio and house monitor amplifiers.

How They're Built

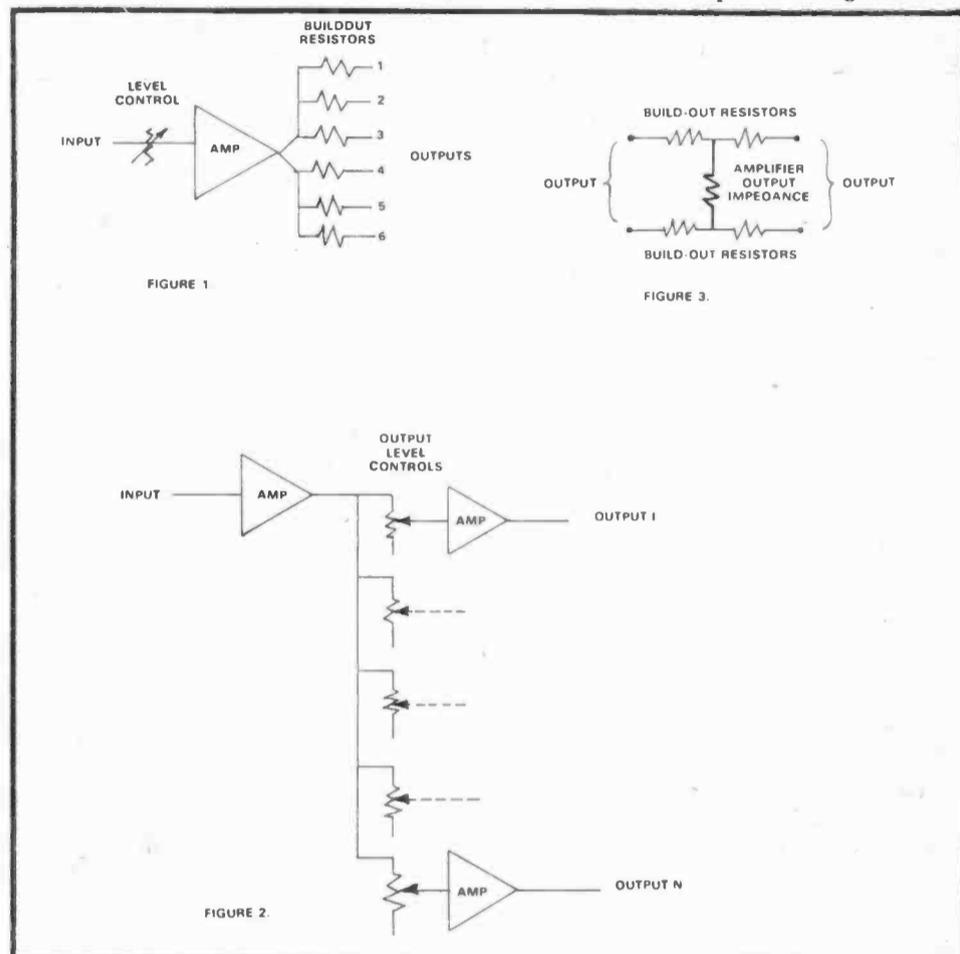
There are two major designs for distribution amplifiers in current use. At Excalibur we manufacture amplifiers of both types, which are illustrated in figures 1 and 2. The type shown in figure 1 uses an amplifier with a very low output

impedance, followed by build-out resistors to provide isolation and to simulate a source impedance for the equipment following. The other type, shown in figure 2, uses individual amplifiers for each output. Within each type there are several sub-types, such as balanced or unbalanced,

the need for an output level control on the distribution amplifier.

What To Go By

The usual methods of judging audio equipment also apply to distribution amplifiers: signal/noise



mono or stereo, transformer coupled or transformerless, modular or self-contained, etc.

The type of amplifier shown in figure 1 has the advantage of being less expensive than figure 2, and is usually more compact and simpler. Figure 2, however, has an advantage in that it is easier to provide individual level controls for each output. In some applications this may be important, although in many applications the equipment following has an input level control, negating

ratio, distortion, frequency response, and output level. A specification peculiar to distribution amplifiers, though, is isolation between output ports. Good amplifiers of the type in figure 1 should have 50 dB or more of isolation, while amplifiers of the type in figure 2 should achieve an isolation of 70 dB or better.

The figure 1 amplifier's output ports look, if redrawn as shown in figure 3, like "H" pads, with the series legs being the build-out resistors and

(Continued on page 5)

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Circle 127 on Action-gram.

Winn Schwartau on Recording:

Designing a Production Studio

Ossining NY ... We've mentioned that there are many different types of production facilities which can be built to suit either very specific or general needs. Some production rooms can be designed to do a variety of production tasks; others only one or two. Let's look at the example we mentioned last month: a small 8 or 16 track studio owner who wants to keep his clients in the door a little longer or be able to attract a new clientele. We will also say that the majority of this studio's business is local musical talent and an occasional link to the radio station for a live broadcast.

The Functions

Our mythical studio owner does not want to tie up his control room with tape copies or such, so he decides to sacrifice an office and some storage space to build a production room to suit his needs:

1. Stereo tape copies; 2 trk—2trk; 2 trk—1/4 trk; 1/4 trk—1/4 trk; cassette.
2. Editing album length music into demo tapes for the local bands.
3. Voice overs.
4. Production of commercials for the local radio station requiring turntable source, SFX, announcer and accurate timing.

If it weren't for the need to record announcers, the owner would only require an office size room to build

his production room, but he now has to have a separate acoustically isolated room with optimally, a window between the control room and studio.

For The Layout

The studio layout is fairly straight forward and need not be complicated or expensive. Generally only one or

two microphones are needed (provision for 4 is always helpful) and the raw room acoustics can be modified with either blankets or cloth covered fiberglass. Remember that the announcer is the key element to this room and it must be comfortable for him to work in as well as easy for him to hear himself. Adequate lighting for reading copy is essential: not blinding, and without shadows.

The podium or reading stand should be covered with a cloth to dampen the sound of turning pages. (That saves a lot of future editing.) Last, a clock is very useful for the announcer to use as a guide to his timing. It should be placed so that he may observe it out of the corner of his eye, without losing his reading pace. It may seem antiquated, but a conventional analog

(Continued on page 8)

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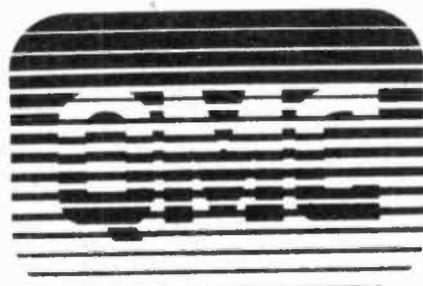
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Reader's Forum

Got something to say about BEE? Any comments on articles? Send them in to the Reader's Forum (BEE, Box 1238, Arlington VA 22210) for a reply.

On Pricing

Gentlemen:

I have observed that very few of your ads state a price for the equipment advertised.

It has long been my policy never to answer an ad that does not state a price, and many people I know feel the same way. After all, if the seller doesn't have some idea what his equipment is worth or at least what he expects to receive for it, how is a prospective buyer going to determine if he is interested?

It seems to me that many of your advertisers are missing a lot of bona fide inquiries due to this simple omission.

W. Bernard Marston
 Chief Engineer
 KLON Radio

BEE Replies

As we mentioned in the response to Larry Behr's letter last month, prices asked, when given by the listee, will be printed along with the contact information on the monthly Key Code lists. We have noticed that about 1/3 of our listings come in with asking prices, and we certainly agree that we would like more in this area since it would help both the buyer and the seller equally. See page 15, the Action-gram, for info on getting the Key Code lists each month, it's only \$12 per year, and get the asking prices too!

AM Stereo

Gentlemen:

Prior to reading your January cover article on AM Stereo, I felt that Broadcast Equipment Exchange was one

of the better technical tabloids serving our industry. I was amazed however, at the blatant inaccuracy and biased nature of this particular article.

As a member of the Canadian Federal Department of Communications Technical Advisory Sub-Committee on AM Stereo, I have had the unpleasant experience of dealing directly with all of the AM Stereo proponents. It is certainly easy for me to understand the source from which information contained in this article was obtained. Although I am not adamantly opposed to the Kahn/Hazeltine AM Stereo system, I am opposed to the tactics used to promote this system, at a government level as well as to the general public.

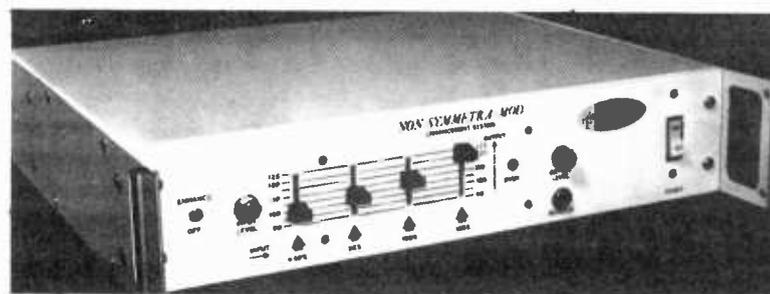
None of the AM Stereo systems are perfect, each has advantages and disadvantages over the other. I find it rather amusing that your article has nothing bad to say about the Kahn/Hazeltine system, and conversely nothing good to say about the other systems. You neglected to state that slightly detuning a narrow band AM receiver in order to decode stereo information transmitted by the Kahn/Hazeltine system can produce approximately 20% distortion, hardly competitive with FM stereo standard.

There was also no mention of the fact that out of band emissions created by the Kahn/Hazeltine system requires this system's L-R channel to be filtered above 5 kHz thereby eliminating separation above the filtered frequency. You did mention however, that "the Harris system offers a 15 db separation figure limited to 400-5,000 Hz". I can't

(Continued on page 6)

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Audio Techniques Enters Market

Stamford CT... Audiotechniques, one of the world's largest professional audio dealers, is expanding to service the particular needs of the broadcast industry. As one would expect, Audiotechniques will remain the exclusive dealer for MCI recorders and consoles in the Northeast; in addition, the company also handles over-seventy-five lines of professional audio equipment.

When queried as to whether Audiotechniques would be taking on the special lines for the broadcast market, as opposed to staying with equipment that plugs into the present line, Hamilton Brosious, president of Audiotechniques, emphasized that their new effort was directed toward what he felt were gaps in the product lines of the standard broadcast suppliers, the Mullinses, the RCAs and similar companies who have traditionally supplied radio and TV stations. Brosious added that Audiotechniques' expertise has been developed in the recording studio business over the last eight or nine years, and that lately there has been an increased awareness on the part of broadcasters of the need for having production facilities which come close to the quality of professional recording studios. Thus, Audiotechniques feels that there is an acute and increasing need for a supplier who deals in the peripheral equipment which this new emerging market demands.

MCI Lead Line

Although Brosious did not quote

anticipated sales figures he did admit that Audiotechniques is presently doing a "considerable" amount of business in the broadcast field since they are the exclusive dealer for MCI recorders, which have become "very popular" in the radio field and the MCI consoles, designed to meet the needs of broadcast production. MCI, repeated Brosious, is one of the key reasons that Audiotechniques is entering the broadcast field, which is, at least for this company, fertile; Audiotechniques deals with the major networks: NBC, CBS, plus major independents throughout the Northeast.

When questioned about the effect that Audiotechniques' expansion might have on the smaller broadcast equipment suppliers, Brosious assured BEE that these companies had no real reason to be concerned; Audiotechniques will not present "unfair" competition" to the companies presently servicing the broadcast market. In fact, Brosious points out that some suppliers will still be able to maintain lower prices than Audiotechniques'; however, he emphasizes that Audiotechniques does offer service facilities that "are second to none." This, of course, is the source of their confidence: "We will keep the customer on the air, no matter what the cost is to us."

Again, Brosious repeated that Audiotechniques is not entering with the traditional broadcast lines, but is

instead concentrating on the peripheral products and the MCI 1/4" recorders, one-fourth of whose sales are made to broadcasters.

Some Background

Although Audiotechniques is not, according to Brosious, very well known to broadcasters, the company is indeed familiar to the recording industry. Audiotechniques is, therefore, contacting the responsible people in broadcast operations, and suggesting products that broadcasters may not know exist, "unique products designed to implement production." Audiotechniques often demonstrates equipment for stations that are located in the Northeast; in fact, if the company has a marketing problem, this regional restriction

may be it. Companies this large usually are interested in serving the national broadcast market. However, while Brosious concedes that it may not be cost efficient at this time for Audiotechniques to commit itself to equipment demonstrations outside of the Northeast, Audiotechniques exhibits, through MCI, at broadcast shows held across the United States.

Audiotechniques feels that it is only logical that broadcast studios, recognizing the need to pick up many recording studio techniques, should turn to one of the recording industry's largest and most reputable suppliers. To what extent Audiotechniques' reputation expands into the broadcast market will depend on their performance, as well as on their competitors.

Distribution Amplifiers.....

.....from page 2

the shunt leg being the amplifier output impedance. For a 600 ohm system, the build-out resistors will be 300 ohms each. The amplifier output impedance should be kept to 1/2 ohm or less. The isolation between output ports is one of the big advantages of using distribution amplifiers.

Feeding the output of a normal amplifier (a console output, for example) to several inputs has two disadvantages: first, if the wiring going to one of the inputs should

develop a short circuit, then all other inputs will also be effectively short circuited. With some older equipment that is not short circuit-proof, there is also the possibility of damage to the output amplifier. The second disadvantage is that either paralleling the inputs together or using a multi-secondary transformer will introduce losses. Most broadcast audio consoles do not have sufficient headroom to withstand the possibility of clipping

(Continued on page 23)

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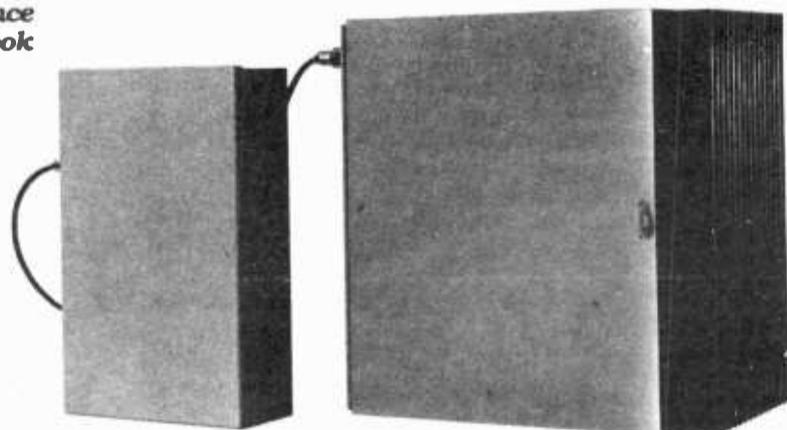
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Circle 124 on Action-gram

BEE: On the Road to Trinidad

Arlington VA ... When Deighton Parris, Chief Engineer and Acting General Manager at Trinidad and Tobago Television (TTT), recently decided to convert to 1 inch and sell his Ampex AVR-2s, he quickly contacted BEE, authorizing us to handle the arrangements. BEE ran Parris' ad in that month's issue, and one of the first to respond to the offer was Dallas Clark, Director of Engineering at TPC Communications, Pittsburg PA.



D. Clark & D. Parris

Soon after this first contact was established, Steve Dana, publisher of BEE, arranged an inspection tour for himself and Dallas Clark. Steve and Dallas arrived in Trinidad only a few weeks after Parris' initial overture, and Dallas, the first client to inspect the AVR-2s, was so satisfied with what he saw, that the negotiations were successfully concluded that same day, January 25, 1980.

Both Deighton Parris and Dallas

Clark, BEE readers, registered their approval of the speed and facility with which the negotiations were made, and expressed appreciation for



The Studio Center

BEE's flexibility, willingness to travel and concern in matching and meeting the financial and material needs of both clients.

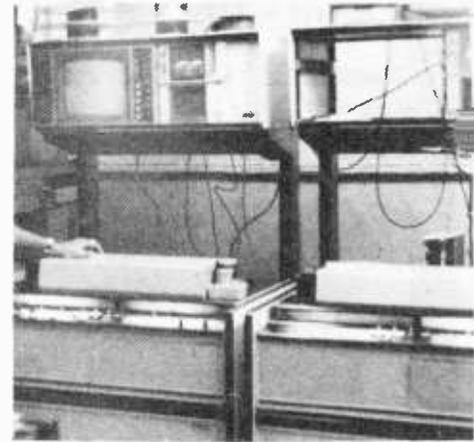
On its part, BEE was especially pleased that an international transaction could be concluded so successfully and that our international clients recognize the dimensions of the service that BEE, particularly, is able to provide. From its inception, BEE has been strongly committed to the international broadcasting market, and we feel that the attention directed toward the concerns of a station such as Trinidad and Tobago Television illustrates the quality of the service that we provide this market.

Because Deighton Parris was able to sell his used Ampex AVR-2s

quickly, he was able to move in his new equipment without delay or inconvenience. If Parris had had to consider trading in his old equipment, an unpopular procedure with many new equipment distributors and manufacturers, or if he had had to delay his purchase until he was able to search out a buyer himself, TTT might have had that equipment lying around for some time.

Unless stations are able to sell their old equipment easily and quickly, the technical and economic growth which new equipment often represents might be hindered or prevented altogether. Once again, BEE has demonstrated its ability to facilitate new equipment sales by helping stations dispose of their used equipment, and because BEE has

legitimized the used broadcast equipment market, companies selling new equipment have an open and uncluttered field.



The Ampex AVR-2's

Reader's Forum

from page 4

imagine where this information was obtained, but I have personally conducted extensive tests on the Harris V-CPM system, at CKLW, with consistent separation figures of approximately 30 db from 200 Hz to 10 kHz. Your article also mentions the apparent phase sensitivity of the other four systems. It should be pointed out that receiver circuitry developed by most of the other proponents is designed to eliminate separation losses caused by phase rotation, in directional antenna systems, of the sidebands with respect to the carrier. The Harris V-CPM system utilizing the required synchronous detection method additionally negates phase distortion created during sky wave/ground wave interference periods, in mono as well as in stereo.

Separation tests were conducted by CKLW with receivers in Buffalo, New York, and Maplewood, New Jersey, utilizing the Harris V-CPM system. Excellent stereo separation was reported at both locations.

It should also be noted that the "sibilant ghost" referred to in your article as being apparent on the Harris/WGN tape was actually present on the master recording. This so called "sibilant ghost" was not received on the tape recorded at XETRA because of the L-R filtering and resultant loss of high frequency separation inherent to the Kahn/Hazeltine system.

The Harris V-CPM system is the only system capable of true High Fidelity AM Stereo. It is totally compatible with all standard AM receivers and does not in any way reduce the station's loudness or restrict the effective coverage area. It is true that the original Harris system was

plagued with severe problems, these inadequacies, however, have been overcome in the new V-CPM system, and the industry should be made aware of this fact.

For the most part, AM fidelity is "receiver-limited". New receiver techniques made possible and inexpensive through the use of integrated circuitry can totally reverse the inferior image of AM radio.

It is encouraging to note a statement issued by FCC Commissioners Quello and Washburn, in which I concur that the potential impact of AM Stereo has not been fully assessed. The AM Stereo system chosen as a standard should not limit the future growth of AM by permanently restricting its audio characteristics to a level substantially inferior to that of the FM service.

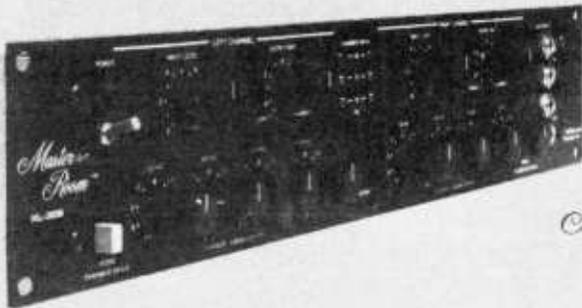
E.R. Buterbaugh,
Vice President/
Director of Engineering
CKLW Radio Broadcasting LTD.

BEE Replies

First of all, we would like to be clear in stating that BEE is not "in favor" of any one AM stereo system over another, we simply cover stories we think are interesting to our readers. The Kahn/Hazeltine system has received more coverage in BEE simply because that system has been tested more extensively, and at more large stations than the other systems. All of our information was gathered from direct interviews and from information filed by the proponents at the FCC. In next month's issue of BEE we will report on CKLW's testing of the Harris V-CPM system, and we welcome input from any of the other AM stereo proponents.

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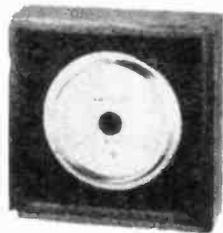
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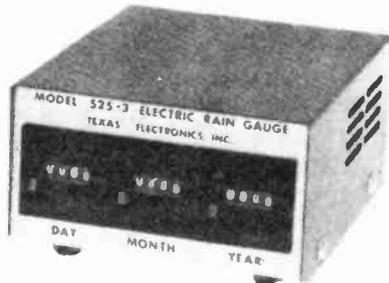
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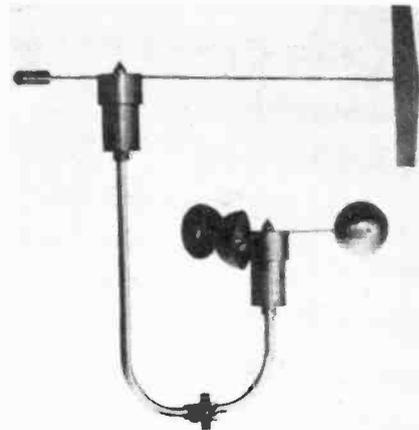
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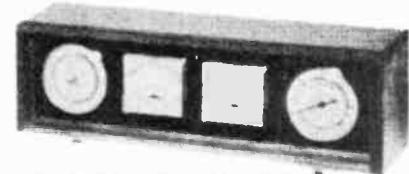


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Console

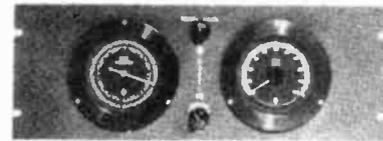


Typical Wind Direction
and Speed Transmitters

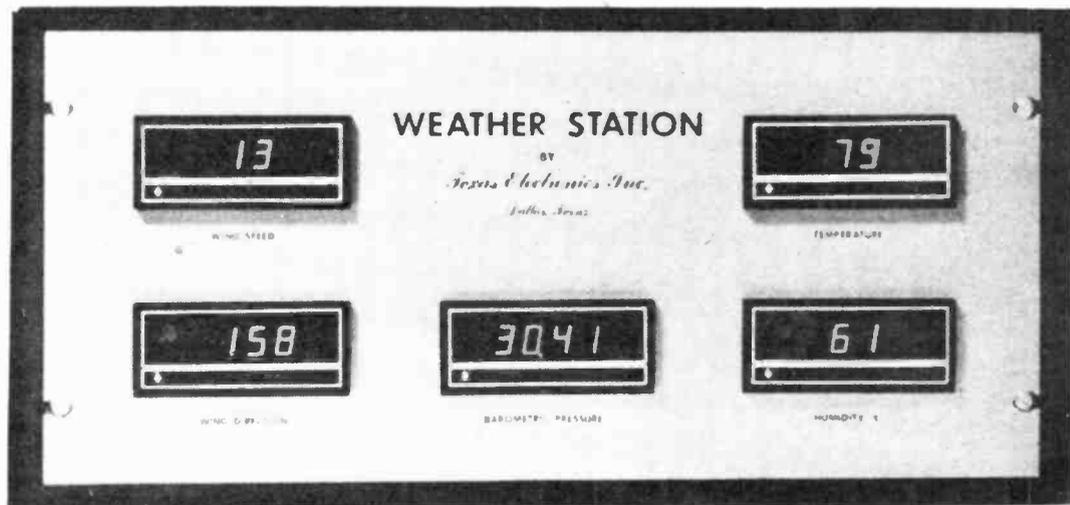
Wind Speed Sensors—A.C. Generator, D.C. Generator,
Photo Chopper
Wind Direction Sensors—Synchro, 360 or 540
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Studio Design

from page 3

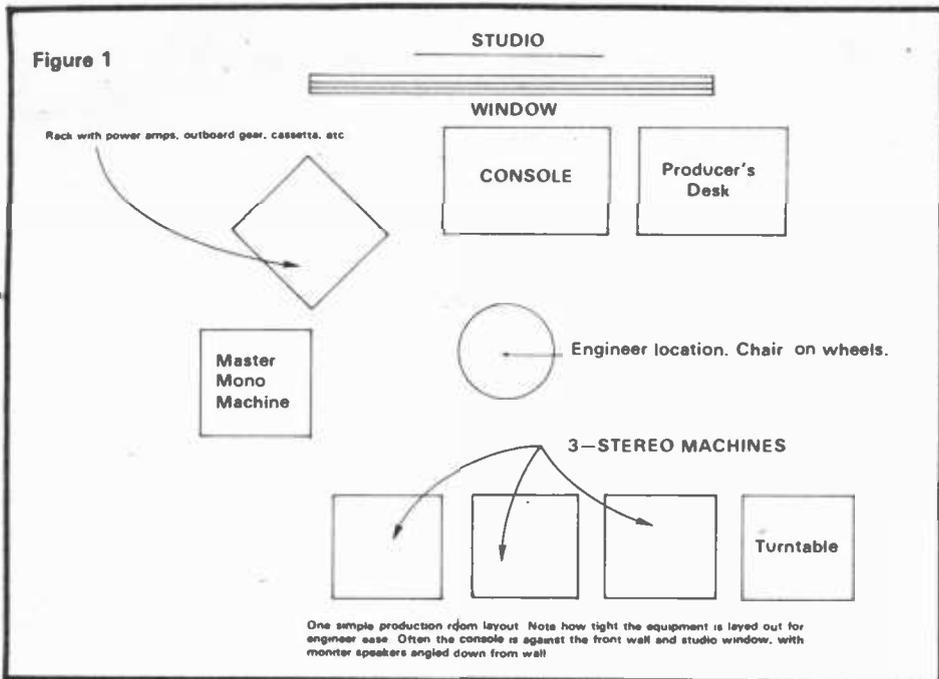
sweep arm clock is the easiest clock for these purposes.

For the production control room, we will not examine the acoustic criteria, only the technical and economic aspects of equipment

but these can be borrowed from the main control room.

Layout Important

Once the actual production work is



layout. A simple complement of equipment for a production control room with the outlined requirements could consist of:

- 3— 2 track machines
- 1— mono machine
- 1— 1/4 track machine
- 1— cassette machine
- 1— turntable w/preamp (fast cueing radio station style)
- 1— mixing console
- 1— stopwatch or wallclock
- 1— monitoring systems (a large one for editing and recording and a small one to duplicate the sound of radio or television speakers.)

In addition, perhaps some outboard effects equipment might be included,

underway, one finds it is very fast paced. The announcer wants to get in and get out. The editing of the announcer and the mixing must be timed accurately; punched in quickly and out for the air by 5 o'clock. For this reason the equipment layout is critical to the engineer's performance. Unlike a music studio, where the console is the prime tool and equipment may be spread all through the room, the production engineer's main tools are the razor blade and tape machine. He spends so much time running a tape machine in a day that all of his equipment must be right at his hands at all times.

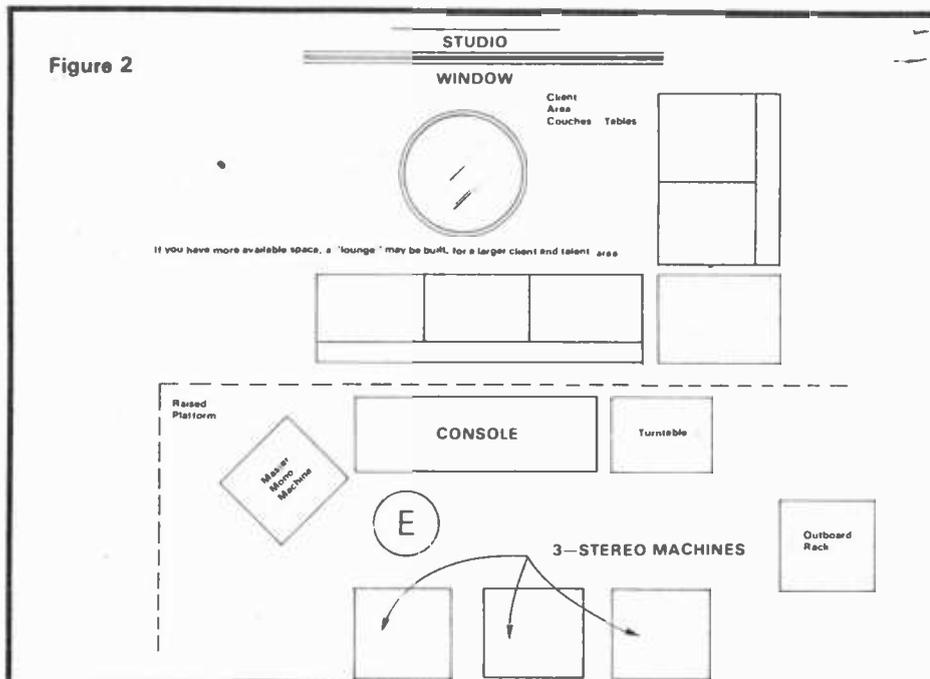
The console is generally a small device often not occupying more than 19" of rack width and with little more

than level, echo and tone controls. The production boards manufactured today offer many more facilities which can help in one's work, but these are not at all essential to turn out a professional product.

There are several variations on a production room layout, all valid, but room restrictions in space and dimensions will determine a lot, see figures 1, 2 and 3.

itself. One should be able to reach the machines' deck controls easily (unless there are remotes) and be able to cue up the turntable while opening a fader on the console.

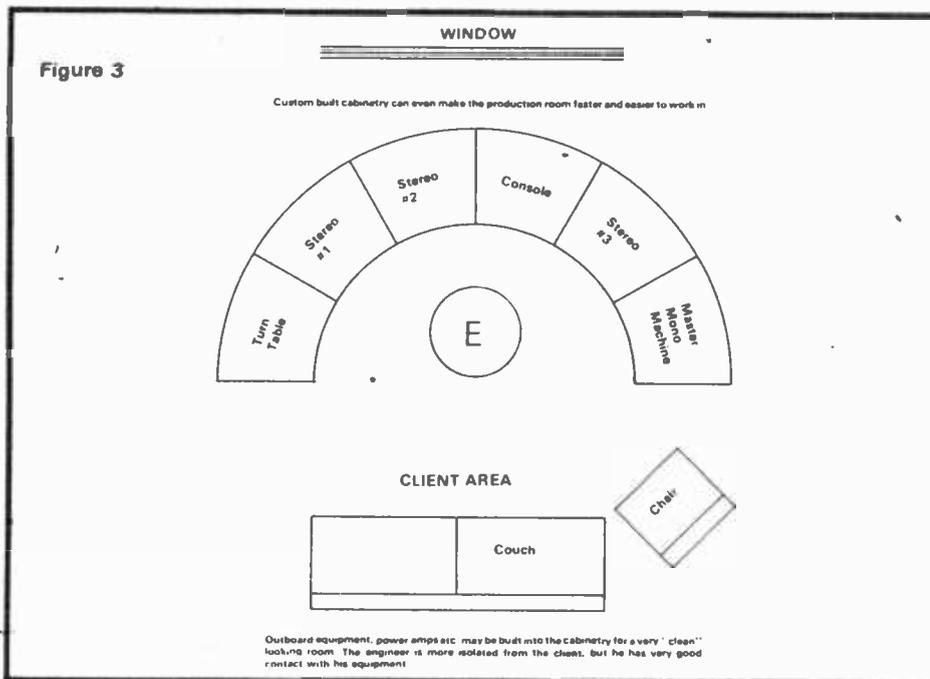
The monitor speakers and rack placement are done according to personal taste but consider the possibility of a client's presence. In that case, one would want full access to his equipment in the rack, witho



Often special cabinets are made for the tape machines and consoles to make the facility even more compact. The layout of the machines for the engineer should be arranged first on paper, or if one has the time and energy, moved around in the room

possibly knocking into the client area every turn.

Next month, we'll examine the console itself and the variety of ways it may be laid out to meet individual personal needs.



DATES FOR EXAMS

Indianapolis IN ... The Society of Broadcast Engineers' spring 1980 certification exams will be given from May 19 through June 6. Applications must be received in the SBE national office by April 8. Anyone interested should write to the SBE Certification Secretary, P.O. Box 50844, Indianapolis, IN 46250 for an application and the certification

booklet. The booklet includes sample exam questions, suggested reading material and a list of the SBE chapters where the exam may be taken.

There has been an increase in interest in the SBE Certification Program apparently due to the changes made by FCC regarding operator licensing requirements for broadcast stations.

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3M PREDICTION—80's Will Be Exciting

Minneapolis MN ... "When I first came here over 30 years ago, I thought there was never going to be a more exciting time than this. After all this time, I still feel that same kind of excitement." The speaker—John Povolny, Division Vice President of Magnetic Audio/Video Products for 3M.

3M had been in the precision coating business for more than 50 years, coating sandpaper and pressure-sensitive tapes, when the opportunity to work on magnetic recording tape presented itself in the late 1940's.

With this history of some 30 years of magnetic tape experience, how does Povolny view the decade of the 1980's? Words like "exciting," "optimistic," and "excellent potential" come easily as Povolny and his fellow 3M marketing executives talk. They're looking ahead with optimism not only for their "Scotch" recording tapes, but for the entire industry.

The men who contributed to that successful operation are excited about the continued growth of the industry as the decade of the 70's draws to a close and a new era is born.

This optimism can be shared by the entire industry the 3M executives believe, and Povolny, Marketing Director Bill Madden, and Retail Products Manager Don Rushin recently detailed their reasons.

Home Videotape

The prospect of burgeoning growth appears inevitable for home videotape. Although home video recording came along 20 years after its professional forebears, it will certainly catch up and surpass professional in quantity.

"For the first time, the consumer can control his own destiny, with regard to what he watches at any particular time," notes Don Rushin.

Even the present small household penetration of home video recorders—one percent—represents a lot of units to Rushin, and it is occurring at a faster rate than color TV's penetration of U.S. households. The color TV penetration is at 97 percent now, he says.

Penetration within five years should be in the nine to ten percent range, something like 6.5 million homes, Rushin believes, expanding

what is already a multi-million-dollar blank tape business. The 3M marketing experts conservatively predict that the average new video tape machine owner will buy nine blank cassettes the first year, six cassettes in each of the next two years and five cassettes in each following year.

These predictions are based principally on using videocassettes to "bend time" by taping TV shows for viewing at a later date. However, as lighter, smaller TV cameras come on the market, it's easy for them to visualize still more video tape sales for home program origination. There are bound to be home movie users who convert to video tape because they see less expensive "instant" processing rather than waiting for developing of film.

The generation of people now in their mid-30's can't remember being without television. Not only the U.S., but much of the world, is becoming video-conditioned. In addition,

Finally, Rushin and Povolny say, new advances in home video equipment will bring further enticement—increased cassette capacity via slower speeds and more

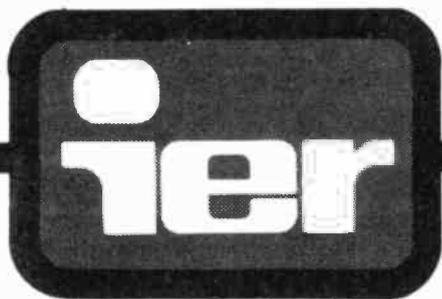
densely packed tape, random access and fast scan (visible fast-forward or rewind). The maximum recording time battle between competing formats will finally end in 1979, they believe, and the next battleground for the tape and equipment manufacturers will be that of miniaturization/portability and extra features.

And For Music

The "Sound Generation." Consumers have always enjoyed having music around, but they were limited by technology to only a few places where it could be reproduced in quality. Today it's a take-along industry thanks to audio tapes and sound systems of greater quality and portability.

The modern adult generation, especially in the 18-to-34 year bracket, spends a lot more time "going" than used to be the case. Even though they've been made aware of the energy crunch, this group spends a lot of time in cars and, many cars have some sort of tape playback system.

(Continued on page 12)



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International Equipment Representatives

Bill Sacks on the Audio Process:**AM STEREO—THE ANSWER?**

Springfield VA ... Here we are in 1980 and AM stations are continuing to lose listeners to FM. AM stereo is thought by some to be the cure all. It's around the corner and is being pushed through the Commission without proper real life testing. All of the systems under consideration have been tested at different stations at different times by the different manufacturers. To my knowledge no direct controlled A/B comparison tests have been performed. How can the FCC set a standard without having performed such exhaustive tests?

The test should be run at several stations with both good and bad antenna and/or transmitter systems. The test set up should be assembled and transported between stations in a step van with all of the proposed systems and measurement equipment on board. A run of standard audio performance tests should precede the more meaningful transient response testing including comprehensive comparison testing with multiple tone burst, phase measurements and TIM measurements. The testing should also monitor the opposite channel while the various transient wave forms are applied to and modulate the other. The only variables should be the transmitter/antenna of the individual host stations. This would give the Commission an unbiased data base to form a policy. If the Commission only uses the data submitted from the manufacturers of AM stereo, then the wolf is being left to guard the sheep.

Now that it's in vogue to say that stereo is going to save AM, it's hard to dispel the myth that stereo FM is

the only reason that AM stations have lost their listeners. There's never any mention of loudness wars (speeding up the records doesn't help either) which have unfortunately spilled onto FM as well. On AM the tendency is to go for maximum loudness no matter what it does to the fidelity. The reason given for this trade (loudness over fidelity) is that the receivers aren't Hi-Fi.

Listeners Have Options

Listeners have options. They can listen to tapes recorded off of their home stereo; they can listen to their home stereo, or they can listen to the

Clint Free on VTR's:

Knoxville TN... I was very pleased to receive Mr. Address' letter (see *Forum*, 1/80 BEE) and clearly, he has done his homework. In my article about edit timing I stated that in order to make good edits the timing must be correct and I then described a method to achieve that time

NRB Show

extensive church video system replacing Sunday school. This last great push to evangelize the world through the installation of an international media system is motivated by a feeling, on the part of the evangelists, that this is the end of a religious era.

The 1980 NRB Convention brought together approximately 100 religious broadcasters to conduct the Convention workshops, each of

radio. One's competition is not always the station down the street. Although the units found at home and in the car do not meet pro specs, they do not have extra dynamic processing added to what is already on the recording. Dynamic processing is very fatiguing to listeners; excessive clipping and hard, fast limiting are the primary culprits. To use one's processing in lieu of making the transmitter, antenna and ground system operate efficiently as a system, is false economy. The money one saves may be lost in listeners. Reaching into secondary area is a function of the transmitter, antenna and ground system. How

automatically. I did not elaborate on the manual methods which could be used and do not now say any method is better, only that the correct time is the only one that will net suitable results.

Mr. Address has taught his editors how to make good edits and this is

More on Edit Timing

commendable. No matter how many automatic circuits you can have, nothing is more desirable than having qualified people operating the equipment. I do say, however, that the fewer details you can assess upon operators, generally, the better.

Automatic timing has been designed into newer equipment (TR600), reducing the time required to make edits and this is better, generally, though not always. As with a-

automatics (guide, chroma, control track phase, etc.) there are times when they will not work and for whatever reason, suitable results can be obtained only by an appropriate knowledge of machine operations.

The philosophy of time saved is money earned applies, and this is why automatics have been designed. My next edit project is to be a quicker method of making edits on quad than the manual methods and the machine operation will be as follows: the operator locates the in-edit position and stops the machine, the tape is then rewound 10 seconds by counting rewind control track pulses (automatically). When the machine is rolled for edit, a 10 second roll cue is given to the playback machine which also been cued to 10 seconds automatically. Seventeen frames prior to the in-edit, an in-edit cue is recorded on the cue channel (to be used for re-editing or preview) the trailing edge of which will trigger the sixteen frame in-edit cycle. The out-edit cycle can be triggered manually or by an out-edit cue which is recorded prior to actually making any edits but using the ten second automatic system used for locating the in-edit time.

My friend John Streets of Merlin Engineering has invited me to sit (or stand) at his booth at the NAB in Las Vegas and I hope to be there. If you have time, please stop and say hello.

Understanding The Market

When asked how the growth of the "electric church" will and/or should affect the equipment manufacturing industry and equipment distributors, most of the NRB members seemed eager to press home one point that they felt was essential to an understanding of their needs: just as the broadcasters build stations, devise programming, train announcers and create a ministry to further the Gospel, rather than to further their own personal goals, so should that be the primary motivation of the equipment

(Continued on page 23)

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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.

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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.

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Chief Engineer for KCIA/KYKK, Humble City, Hobbs, New Mexico, phone Jerome Orr, 505-392-6546. KYKK is 100,000 watt stereo, KCIA is 1000 watts on 1110 AM.

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JANUARY FCC DEVELOPMENTS

by B. Jay Baraff/
Baraff, Koerner & Olander, PC.

The new year brought with it a dramatic increase in FCC activity. The following are highlights of those matters we feel are of particular interest to the broadcast industry.

Backlog Reduction

The FCC is establishing a task force to deal with the substantial backlog in new FM channel assignments, which now stand at 175 unresolved cases. The goal will be to reduce substantially the backlog and also reduce the processing time for petitions for rulemaking to six months.

Political Rulings

The FCC ruled that the Iowa caucus which chooses delegates to the Presidential conventions would be treated as a primary election and therefore requests for lowest unit charges for broadcasting political advertising will be applicable.

Comments For Deregulation

1. The FCC has extended its deadline for filing comments to March 25 in its deregulation of radio. The Commission, in its inquiry, is looking to remove formal ascertainment requirements, eliminate all FCC guidelines limiting radio commercial time, its involvement into News, Public Affairs and all other programming and relieve broadcasters of the need to maintain daily program logs.

2. The FCC is seeking comments on amending its TV Rules to permit the presentation of only audio or visual programming instead of the required simultaneous operation. The FCC has had waivers in the past for operation on the visual transmitter with programming such as national, international and local news, financial news, sports news, weather reports and time. The aural transmissions are, for the most part, background music. These waivers are generally requested for off hours when the stations are not normally on-the-air. Thus, the FCC felt that it might be appropriate to permit this previously unavailable service in the "graveyard" hours and to allow visual informational programming at that time.

3. The Commission has additionally updated and clarified various Rules for AM/FM and TV as follows: (a) Added into the lottery rule an exemption which applies to fishing contests allowing them as long as

they are not conducted for profit; (b) The FCC has added the requirement for tests and maintenance that an informal letter be sent to the FCC in Washington; (c) The FCC has now provided for automatic Program Test authority to applicants for a new or modified non-directional AM/FM and TV station, and also provides for automatic Special Temporary authority for 30 days allowing permittees for modified non-directional AM/FM and TV facilities to discontinue operation or to operate with temporary facilities as necessary to accommodate construction. The FCC in Washington and the Engineer-in-Charge must still be notified, and the applicants still must submit FCC Form 302 within 10 days after commencing automatic Program Test Authority.

Financial Showing

The FCC, in a significant ruling, has deleted its requirement for a detailed showing of financial qualifications in an application to change the facilities of an existing broadcast station. However, this showing is still required for construction of new broadcast stations. The FCC found that such a change is normally on a business judgment and seldom does a question arise as to adequate financing.

Minority Ownership Not Factor

The FCC rejected a petition by Stations WPCF, Portsmouth, and

WOWI-FM, Norfolk VA, both owned by a black licensee, which asked for extraordinary relief in its pending renewal proceeding involving issues regarding the licensee's sales activities, illegal broadcasting of lottery information, false advertising and illegal transfer of control. The licensee argued that in light of the Commission's policy of fostering minority ownership, it should be given special relief in this proceeding by terminating the investigation and granting their applications. The petitioner contended that it had been subjected to discriminatory treatment by the Commission staff because of its minority ownership. The FCC ruled that while the entry of minorities into the broadcast field was one of its foremost goals, it has never been FCC policy to exempt minorities as a group from compliance with its rules.

Hearing Terminated

The FCC terminated a hearing on the renewal of Stations WSAY, Rochester, and WNIA, Cheektowaga NY, and conditioned the stations be sold to qualified applicants within six months. The stations' renewals were designated for hearing on issues including efforts to ascertain and program for community needs, EEO programs, and financial qualifications, among other items. However, when the sole owner and operator of the stations died, the FCC ruled that these unresolved character qualifications are no longer relevant

and the public interest would be served by terminating the proceeding and allowing the stations to go silent in order to assist the estate in effectively managing the stations during the interim period.

Reimbursement Permitted

The FCC permitted the reimbursement
(Continued on page 23)

New Tape Head & Pressure Roller Maintenance Kit Makes Cleaning Easier... And More Efficient

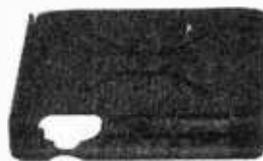
Texwipe's new Audio Tape Head Cleaning Kit TX250 contains everything a broadcast maintenance engineer needs to keep heads clean — to ensure peak sound fidelity and low incidence of failure.

Specifically designed cleaning pens, one for pressure rollers, one for heads feature adjustable lint-free absorbent Clean-Wicks that can be cut to exact shape to suit the job.

Each kit, which costs only \$27.50, contains enough material for more than 900 cleanings! Subsequent cleanings cost less than a penny a piece.

Order your Texwipe kit today and start cleaning your reel-to-reel and tape cartridge machines the professional way. Or write for literature to Texwipe, Hillsdale, New Jersey 07642. (201) 664-0555.

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Complete Kit Includes:

- One 7-oz. can Audio Tape Head Cleaner
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3M Prediction

from page 9

Another reason for optimism is that there are many more single-person households in America today. The recent statistical ratio of 3½ persons per household is not holding. However, equipment and tape manufacturers don't mind this at all!

Tape duplicators, recognizing the growing demand for better quality, are certain to use higher quality tapes for pre-recorded music. Too often, in the past, a high-quality, painstakingly produced performance was offered to the public on the least expensive tape the duplicator could find. But these days are coming to an end.

All in all, the newest trends in American lifestyle, even with the economic uncertainties, are bound to require more and better tape.

New Product Applications

Innovative product development makes for market expansion, and all manufacturers have a great potential for growth, says Povolny, citing 3M's new metal particle audio tape as one example. While present production of Scotch "Metafine" tape is in the audio cassette format, there is no reason why it can't be applied to other formats, including video.

"Metal particle tape has higher performance characteristics at a given tape speed and higher packing density capability per unit area than oxide particle tapes," says Rushin. "That's a fact! So it's not a question of if metal particle tape will be used in video, computer or other magnetic

applications, but only a question of when metal particle tapes will be used in them.

"That 'when' is undoubtedly a very big question. The only thing I am reasonably confident about is that the 'when' will vary from application to application." Rushing says.

In other words, the digital audio, home video, broadcast video, or computer markets won't all be commercialized for metal particle introduction at the very same time. But Rushin notes that 3M already is working with video tape equipment manufacturers who are interested in modifying present systems to accept metal tape or interested in developing new system formats to do so.

All in all, metal particle tape will have a profound impact on the whole audio/video industry, both professional and home, promoting greater capacities, more miniaturization and portability, and enhancing the continuing demand for better quality.

Meanwhile, 3M isn't letting any grass grow under its feet. Even with metal tape making an impact, 3M plans to introduce a new non-metal, open-reel tape in its "Master" series at the January CE. Under development for several years, this tape will be "best on the market" with brighter middle and high range capabilities than present oxide tape. A new music mastering tape in the works, too, the next generation after "Scotch 250." 3M believes there's still a huge non-metal market to be served.

Digital Audio

As for digital audio development, 3M recognizes the ultimate need for tape specially constructed for digital work. In fact, it makes the tape now being used on existing digital systems. But there is also the recognition that "digital for everyone" is some years away. In fact, the higher standards and higher costs for digital audio technology may cause some users to stay with analog technology for along time.

And, what of the video disc? The 3M folks see video disc as complementary to video tape, with much the same relationship as the LP record has to the audio cassette. Besides, it will take a lot of tape to reach the stage of a finished video disc, just as it takes a lot of audio tape to produce an LP. When the video disc industry is fully developed, many more production houses will be active, and that means more tape business.

For The Long Term

3M has, for many years, been researching and patenting recording techniques, some of which bear on the video disc process. As a result it will soon be offering short-run disc replication, in any disc format, to emerging industrial, educational and commercial clients. Looking further into the crystal ball, the 3M executives predicted:

- A "home entertainment control center" combining TV, video disc, video tape, facsimile, digital audio, games, data storage and other vital entertainment and information functions will become a practical reality. Its acceptance will provide

dramatic growth opportunities for audio and video tape manufacturers.

- The audio tape market will be strongest in the cassette format. Open reel will be viable for some years, not booming, but still vital to production houses and some audiophiles.
- While direct satellite-to-home TV transmission is a ways off, that possibility opens a tremendous market for more time shifting with video tape. In the meantime, traditional broadcasting network and TV program syndicators have a continuing need for tape. And broadcast news gathering, always more competitive and sophisticated, has shifted almost entirely from film to tape in recent years. "We have a very sound position in the tape field and visualize an exciting future," says Povolny.

"There's no indication that the use of the magnetic media will be slowing down. Audio will do at least as well as in the past, and video's growth will be much greater," says Rushin.

"We're just attempting to make each year better than the previous one," says Marketing Director, Bill Madden. "The fact that we change more than one digit in the number of the year isn't significant—there are just continuing new opportunities for us to grow, looking for more efficient and effective ways to record and play back recorded information."

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- 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.)
- Why you should never work on a contingency (speculative) basis. (See Chapter 7.)
- Ingenious ways to promote yourself — and make people want your services. (See Chapter 9.)
- Contracts: why you should avoid them at all costs. (See Chapter 10.)
- Just what do consultants do all day? (See Chapter 11.)
- How to market your ideas. (See Chapter 11.)
- Why you'll never have to worry about competition. (See Chapter 13.)
- 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!

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Switch to Tape Pays Dividends

Redwood City CA... An independent Minneapolis television station is increasing its programming independence while reducing its operating costs by switching from film to one-inch video tape.

KMSP-TV expects to save \$12,000 a year in shipping costs alone by ditching a new film library on one-inch tape and purchasing a popular syndicated series in the same format, according to Donald E. Swartz, president of United Television, Inc., operators of KMSP.

Adoption of the one-inch format will also give the station greater flexibility and freedom in its programming as it phases in operation of a satellite earth station, Swartz added.

"This is the wave of the future for independents," he said. "We are gaining control of our programming and content we never had before."

United Television, which also operates KTVX-TV, Salt Lake City, and KMOL-TV, San Antonio, recently signed two agreements that will eliminate shipping and handling problems for a large portion of KMSP's programming.

First, it purchased 207 episodes of "All in the Family" from Viacom on one-inch tape in the Type C format. Under the agreement, KMSP can play each episode seven times before it must erase the tape. The station retains the blank tape.

"We decided to go to one-inch tape after we analyzed the increased cost of shipping by air, the time and effort involved in handling syndicated material, transportation delays, and other factors," Swartz said.

"All of our initial investment is in the tape," he added, "but we expect to recover that in shipping and handling costs. Transportation costs will continue to rise and, by retaining the tapes, we will be able to free-up personnel normally involved in handling syndicated material."

KMSP has also signed an agreement with MCA-TV to transfer 400 feature films to one-inch tape.

All of this new programming will be stored in a former loft that has been converted to a storage facility. The absence of humidity and temperature problems associated with film provided a simple solution

to the storage problem, Swartz said.

The film to tape conversion will be done on two Ampex VPR-2 helical scan videotape recorder/reproducers currently in operation at the station. The VPR-2s are also being used to record back-up tapes of sports and news feeds via satellite, and will soon be put to work in the production area.

Satellites play a major part in KMSP's future plans, Swartz said. The station currently receives sports specials such as Spartacade via satellite, as well as news feeds and other material from INTA.

KMSP expects to have its own earth station operational by November 1, and has applied for permission to transmit programming via satellite through an uplink. The station has already signed a letter of intent with Blair Television to receive commercials via satellite and then tape them for distribution to other stations in the area.

One-inch tape figures in all of these plans, and Swartz sees the VPR-2s as the start of an eventual conversion to the one-inch format at KMSP-TV. Economics as well as programming flexibility is part of the

reason.

"Square footage in a studio costs a lot of money," Swartz said. "You can save a considerable amount of both by going with the one-inch technology."

**See Action-gram
on page 15 ...
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PAL Standard Video Equipment

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RCA TR-61, 1 each
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AMPLIFIERS

Want To Sell

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.

Marantz Model 7T preamp (pre Japan), excel. cond. Key Code 1-14E.

Peavey CS-800 stereo amp, 400 watts per ch., 800 watts mono, like new with book. Key Code 1-55.

McIntosh MC40 (2), excel. Key Code 1-9A.

Marantz Model 5. Key Code 1-9.

McMartin LT10B amplifiers like new, MSA-1 pre-amps like new. Key Code 1-11.

Spotmaster solid state pre-amp's (3). Key Code 12-66.

Knight Stereo Pre-Amp, tube model. Key Code 12-40.

Toshiba 70W per ch headphone amp (Micro series). Key Code 12-58.

Eico mono preamps & power amps, good cond, not used commercially. Key Code 12-65.

BGW 100 power amplifier. Key Code 12-58.

Want To Buy

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

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

RCA BA-71C pre amp (4), BA-74B monitor amps (2), BA-73B program amps (2), for parts, mainly for input-output transformers. Key Code 12-27.

ANTENNAS & TOWERS

Want To Sell

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.

Heliac 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.

Cable clamps and misc. Tower hardware. Key Code 1-76.

Andrew 1-5/8" gas barrier (1261B), 90 degree miter elbow (1061) and 58" rigid transmission line (2761-1). Key Code 1-74.

Horizontal Jampro antennas (6) w/heaters tuned to 93.1 MHz. Key Code 1-76.

Iso-Coupler, Electronics Research type 402, adjusted for 94.5 MHz. Key Code 1-74.

Ten 20' sections, 6-1/8 flanged both ends, one 7' section with 45 degree elbow 50 ohms, gd. cond. Key Code 1-70.

Andrew 50 ohm rigid transmission line, 1 1/2", 250' in 20' lengths. Key Code 12-44.

Gates tuning box, used to tune 1340 KHz to 150' tower, extra caps included, only one year old, used indoors, like new. Key Code 12-61.

Phelps-Dodge 3 bay CFM-LP-3, w/radoms, 1.5db gain, tuned 92.7 MHz, 1 yr old. Key Code 12-49.

Sample loops (3), legal in Canada and Mexico, make offer. Key Code 12-20.

Want To Buy

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

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

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

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

45' pole for top of FM tower to hold FM antenna, 3 bay, new preferred. Key Code 1-70.

Tower, 150' or 200', any cond for low budget FM operation. Key Code 12-56.

C.P. antenna, 1 Bay, tunable to 94.3 MHz, must handle 3500 watts input power. Key Code 12-65.

Tower approx 100'. Key Code 12-44.

FM Antenna up to 10 bay-vertical only, returnable complete. Call BEE, 800-336-3045.

AUDIO PRODUCTION (OTHER)

Want To Sell

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.

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. Tel: 608-271-1100 or TWX: 910-268-2745.

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

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

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

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

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

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

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.

Urei Digital Metronome, Model 963. Key Code 1-32.

Jackfield, Switchcraft 1400 w/26 MT-334B jacks, 22 individual MT-334B jacks (loose), 2 ea. Cannon XLR-3-35 wall microphone recepticle, all new. Key Code 1-54.

Advent Model 100 noise reduction units (2), excel cond. Key Code 1-36.

Cinema 4031-B equalizers (3), Hycor 4201 equalizer (1). Key Code 1-28A.

TASCAM!
FROM DETROIT'S PRO-AUDIO
WAREHOUSE
Sound Solutions
(313) 739-7020

JBL Mark XII Studio monitors (pair), excel. cond. Key Code 1-35.

ARP Odyssey II Electronic music synthesizer model 2813. Key Code 1-34.

B&K precision level meter, type 2203, w/Octave filter set, type 1613, also many attachments and extras. Key Code 1-32.

DBX 155 units, 4 available, 4 ch switchable, or 2 ch simul, record and play, new. Key Code 12-45.

Gorman-Redlich Model CEB, EBS encoder/decoder, new. Key Code 12-61.

Altec 605A spkr., no cabinet, excel. cond. Key Code 11-17.

API Model 440, conductive plastic linear motion faders, (7). Key Code 11-17.

Dorrough 310 discriminate audio processors (2). New cond., latest circuit updates. Will ship. Key Code 11-19.

Fairchild 664 passive equalizers, no cases or hardware, need knobs, diagrams are available, good condition. Key Code 11-23.

Hycor, model 421. UTC, model 4C. Gray 810 stereo TT EQ. (2). Gray 808 mono TT EQ. (3). Gray 602C TT EQ. Key Code 11-39.

Garner 105 (bulk tape eraser), new. Key Code 11-55.

Southwest Technical Products 216/A graphic equalizer, built from a kit, 9 frequency stereo, very good condition. Key Code 11-23.

DBX 187 like new cond. 4 ch. switchable record or play. Key Code 11-55.

Kenwood audioscope model KD 3500. Key Code 11-72.

International Contact Section

For more information on any product listed in BEE contact the following companies:

In Canada: United Video Ltd
1485 Triole Street
Ottawa, Ontario K1B 3S4
Canada
613-741-5554

En Mexico: IER
PO Box 1142
La Jolla CA 92038
Tel: 714-459-3691
Telex: 181756

In Other Countries:

Broadcast Equipment Exchange
PO Box 1238
Arlington, VA 22210 USA

Tel: 703-525-0400
TELEX: IMASINC 64593
Cable: IMASINC ARLINGTON VA

General Radio modulation monitor (AM) works, clean. Two Schaffer 25Hz generators Limpander compression amp. Eico model 661 tube tester. Key Code 11-53.

Grado signature model 1B cartridge, hand made, never used. Key Code 11-72.

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 dynamic sybillance controller. Ke Code 2-33.

Haeco CSG Stereo to mono compatilizer. Ke Code 12-8.

AUTOMATION EQUIP

Want To Sell

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-1C programmer, motor driven fader, overlap, monitor amplifier, odd-even time announce cart units, I.D. & fill cart units (Criterion, Metrotech 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.

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

Autogram Automation Stereo System now in use with two random select McCarta Carousels, one Sequential, Scully Sterec tape, playback/record w/interface equip., one McCarta cart machine, all w/remote control box. Also 500', 1-5/8" air Heliac FM transmission line type HJ7-50 A w/isolation coupler, and 4-Bay dual polarized antenna. James Ballard, WMIK, Box 608, Middlesboro KY 40965. 606-248-5842.

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

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

Carousels, 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.

Schafer 800 automation brain, tube type working when removed. Key Code 1-74.

Schafer 800T stereo brain, slow speed logger, network joiner, SMC 250 rndom select carousel, plus 5 racks. Key Code 1-33.

ITC 750 series reel play back only, gd. cond. Key Code 1-23.

Schafer system, complete, 3 Ampex reel-to-reel decks, 3 carousels, and time announce, lots of spare parts. Key Code 1-48A.

Gates DCU-3 25Hz sensor, gd. cond. Key Code 1-23.

Tone Sensors, 25 Hz for automation, in gd. cond. Key Code 1-74.

Gates DC-10 clock with model TA time announce unit, gd. cond. Key Code 1-23.

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ACTION-GRAM

FEBRUARY 1980
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AUTOMATION ... WTS ... CONT.

Remote Control for live assist for SMC DP-2. Key Code 12-64.

IGM RAM automation used 16 months, all updated modifications made. Includes 4 ITC reel decks, time announce, 3 carousels, 4 racks. Original cost \$24,000. Replacement cost \$27,000. Will take best offer. K. Confer, KSSN, Box 96, Little Rock AR 72203. 501-378-0200.

Continental "Probe" Automation Systems, 2 Scully 270 decks with individual 25Hz sensors, 2 carousels, 1 single play (stereo). Key Code 12-64.

Want To Buy

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.

Tone generator or Automation system, must be in excel cond. Key Code 1-59.

Go-Cart or carousels for Automation system in excel cond. Key Code 1-59.

Time carts for Automation system plus logger in working order. Key Code 1-59.

Playback machines w/large reel capacity, operating or repairable, also sensors. Buy outright or swap old mikes. Key Code 1-19.

Autogram, Sparta or similar stereo sequential cartridge type automation. Key Code 1-60.

IGM MOS-200 or MOS-400 set up for carousel control. Key Code 1-53.

Stereo sequential automation with logging, small. Key Code 1-60.

IGM Model 500 music modules. Key Code 1-53.

Carousel or similar, like Instacart, etc units, any cond. Key Code 12-56.

Time Announcer for automation system, must be in good condition. Key Code 12-5.

Cart Machines, rack mounted for automation, in good working condition. Key Code 12-5.

Tone Generator for automation, must be in excellent condition, 25 Hz. Key Code 12-5.

Carousels for automation, must be in good working condition. Key Code 12-5.

SMC SSP-30-60 automation PGM's, SMC AS-10 switcher (audio), SMC P.S.A. power supply for above. Key Code 12-32.

CAMERAS (VIDEO)

Want To Sell

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. SoundDesign, Box 921, Beverly Hills CA 90213. 213-276-2726.

Ikegami 240 with Saticon tubes, less than 1 yr old, many accessories including batteries, shoulder pad, phaseshifter module, head sets. Paid \$23,400 less than 1 yr ago, make offer. Terry Hamad or Patricia Chamberlin, Instant Replay Video Productions, 2303 Kemper La, Cincinnati OH 45206. 513-861-7065.

Sony 1610 Color video camera and 3800 VCR. Key Code 1-10.

IVC/B & H 90 self contained vidicon color cameras, 3 pcs some with lens. Key Code 1-44.

Sony 1610, (2) Sony 3450, Sony 2850A's w/TRI Edit controller, V03800, V01600, Panasonic 19" monitor, plus misc. Key Code 1-6A.

Sony 5000BP (Plumbicon) Color Cameras (3), Color Control Units and Sync Generator for \$15,000. Special Effects Generator and Phase Shifter also available. Call Dave in PA, 215-337-3836.

RCA PK-330 B&W studio cameras, 3 heads w/15-150 Angenieux lenses (motor-driven iris & zoom), 2-CCUs, 600 ft of cabling, manuals. Key Code 1-26A.

Ampex TA555 UHF Transmitter—55 kw. Good Condition, \$150,000.

GE TT57 30 KW VHF Transmitter—Spare Klystrons available Fall \$45,000.

GE PE-400 Color Cameras—Pedestals, Racks, like new, ea. \$14,000.

GE PE-350 Color Cameras—All accessories, good condition, ea \$7,000.

GE PE-240 Film Camera—Automatic Gain & blanking, \$8,000.

IVC 500 Color Camera—Lens, cables, encoder, \$8,000.

RCA TK-27A Film Camera—Good Condition, TP 15 Available, \$12,000.

Eastman CT-500 Projector—Optical and mag sound, \$9,000.

Eastman 285 Projectors—Reverse, good condition, ea \$6,000.

RCA TVM-1 Microwave—7GHZ, Audio Channel, \$1,000.

RCA Hi-Band refurb. heads—RCA Warranty, ea. \$3,500.

Ampex 1200A VTR's—Loaded with Options, ea \$24,000.

Norelco PC-70 Color Camera—16X1 200M lens, 2 available, ea. \$18,000.

Norelco PCP-70 Color Camera—Portable or Studio Use \$10,000.

Norelco PC-60 Color Camera—Updated to PC-70, new tubes, \$11,000.

Harris TE-201 Color Camera—Low light, small size, ea. \$10,000.

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Norelco PC-70 camera, with tubes & complete w/pneumatic pedestal & cradle head, gd cond, used in studio only. Key Code 12-43.

Panasonic WV-2200 camera w/NV-3085 VTR, NAV-610 color adapter w/power supplies & all hookup cables. Key Code 12-1.

Panasonic WV-3700, portable demo, 1 yr warranty. Key Code 12-34.

Phillips LDH20, 2 avail, 3 Tube Plumbicon, w/CCU, 500' cable ea, 1:10 zoom lens, 2X telextender, Video Control Unit, ITE cam head, tripod & dolly. Excellent condition. Key Code 12-6.

Hitachi FP-1212, 3-Tube Plumbicon, w/CCU, 50' cable, 1:10 zoom lens, tripod, dolly, excellent condition. Key Code 12-6.

Hitachi 1000P, 3 Tube Plumbicon, w/CCU, 50' cable, 1:15 zoom lens, tripod, dolly, excellent condition. Key Code 12-6.

Panasonic WV-2150 KT, demo, full warranty. Key Code 12-34.

Hitachi FP20, 3-saticon tube camera, new with factory warranty. Key Code 11-63.

JVC GC-4800U color camera w/CCU, GA-20U adapter, 33' camera extension cable, and 4X zoom. Operates good. \$1,795. Inderwieser Assoc., Box 7791, Orlando FL 32804. 305-295-3034.

RCA TK 60 studio B/W cameras (2), w/zoom lenses, fixed lenses, manuals, power supplies contol units etc., perfect condition, never used. Call BEE, 800-336-3045.

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

Vidicon camera w/electronic viewfinder. Key Code 1-5A.

RCA WP-16B power supply, TK-60-B remote control, TK-60 zoom lenses, spare 4 1/2" I.O.'s, field tripods, pedestals, cradle heads and wedge plates, crab dolly or mini-crane. Key Code 1-7.

PC-72 with lens in good working condition. Call BEE at 800-336-3045.

CART MACHINES

Want To Sell

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

Gates Cartrtape 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 3300 record-playback, w/full cuing in service til 11/79, gd cond. Key Code 1-43B.

Gates Criterion compact cart machines (3), gd cond. Key Code 1-68A

Tapecaster Cart recorder w/150 Hz cue, gd. cond. Key Code 1-35.

Tapecaster 700 R.P., gd cond. Key Code 12-54.

Ampro CT459B stereo record/play, 3 cues, fast forward, splice finder, excel cond. Key Code 12-24.

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.

Spotmaster 5 spot reconditioned by B.E. Key Code 12-54.

Macarta 592 stereo record/play, gd cond. Key Code 12-24.

ITC RP-Delay (1) very gd cond. Key Code 12-38.

Macarta 512 stereo playback, gd cond. Key Code 12-24.

Broadcast Electronics 3000 series stereo playback with all 3 trip tones (2), excellent condition. Key Code 11-6.

Tapecaster A-700-RP stereo record/play. In use. Key Code 11-18.

Spotmaster 500D desktops, rec/play (2), play only (2), good condition. Spotmaster cart winder. Key Code 11-53.

Broadcast Electronics 3000 series stereo record/playback with all 3 tones & fast forward, excellent condition. Key Code 11-6.

RCA RT-27AS stereo rack-mount record deck, record amp. and playback deck—in wood table-rack. In use. Key Code 11-18.

Tapecaster A-700-P stereo playback deck. In use. Key Code 11-18.

Want To Buy

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 2-38.

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

Record/Play cart machine, any model. Key Code 1-17.

ITC Cart Machines. Need immediately, new or slightly used, other models considered. Key Code 12-10.

Cart machines, any make, any condition. Key Code 12-10.

Gates Criterion 80 mono play units (3), two record amps. Key Code 12-35.

CASSETTE & REEL-TO-REEL RECORDERS

Want To Sell

Ampex, Soundcraft, RCA, 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 & 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, 15-17 1/2-3 3/4 ips, closed loop, dual capstan servo, transport, 10 1/2" ree capacity, front bias switch, owners text manuals. Key Code 2-52C.

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

Teac/Tascam 7010 tape machine 10 1/2" reel 2 trk rel. ply back, 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, Bo. 13036, Orlando FL 32859. 305-855-6868.

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

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

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. Tel: 608-271-1100 or TWX: 910-268-2745.

Pioneer RT-707 rack mount auto-reverse tape machine, 7 1/2 x 3 3/4 quarter trk stereo, 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, 7.5-15, rebuilt like new, \$2250. Autodyne, Box 13036 Orlando FL 32859. 305-855-6868.

Teac A-3340, 4ch., simul-sync stereo reel to reel w/6 aluminum 10" reels & 10/10" reel. Ampex HF tape. William Spiess, 4102 Summi-Pl, Alexandria VA 22312, 703-750-2917 or 703-525-7778.

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.

Ampex 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, immediate available. Key Code 2-56.

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

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

Electro Sound ES-505-C new, never used 2T stereo, 7.5-15, w/console, sel-sync, tes oscillator, motion sense, automatic gat. activation, and record head idler options. Cos \$5000. Our price \$3995. Autodyne, Bo. 13036, Orlando FL 32859. 305-855-6868.

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CASSETTE ... WTS ... CONT.

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

Metrotech 543R reel-reel recorder, excel. cond. 10 1/2" reels, 3 3/4-7 1/2 ips, 2 trk stereo. Key Code 2-44A.

Tape-a-Thon Librarian dual deck, large reel, 1 1/2 ips, auto reverse, automatic music intermix programming, like new, designed for background music systems. Key Code 2-59A.

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

Technics Cassette and Reel-to-Reel machines at the lowest prices anywhere. Call Ramko Research collect (916) 635-3600.

Ampex 354-2 transport rebuilt to like-new w/new capstan and new 2 trk stereo head stack assembly, w/manual. Key Code 1-73E.

Scully 280-SP14 holds 14" reels, record/playback. Key Code 1-53.

Ampex 351 mono (full or half trk), completely rehabilitated, cosmetically excel. Transport has AG 350 escutcheon, will install and align new heads and calibrate to your tape. Has interface for Inovonics Tentrol. Key Code 1-50A.

Scully 270 stereo 14" playback deck (Grey) w/25Hz tone sensor, gd. cond. Key Code 1-35.

Sony TC-250 1/4 trk stereo tape deck, gd working cond. Key Code 1-30J.

Telex II copier. Key Code 1-30E.

Ampex 354-2, 7.5-15 ips, gd. cond, stereo and mono headstacks, hard shell Ampex cases. Key Code 1-27.

Ampex AG440-4B in console w/2-trk & 4-trk reads, remote control, superb cond, \$35.00. SoundDesign, Box 921, Beverly Hills CA 90213. 213-276-2726.

Ampex 8 trk master recorder, Magnacord 728, and Magnacord 1028. A. Papa, 213-768-1604 or 213-399-9069 or J. D'Anastasio, 305-424-2352 or 215-546-1808.

Martin Audio Varispeed III power oscillator, electrically and cosmetically superb, has 10 turn pot for precise settings, gives variable speed capabilities to Ampex 300s, 350s, 440, w/H/S motors. Key Code 1-50.

Technics RS-1500, RS-1520, RS-M85, and others. All available from Full Compass Systems, 6729 Seybold Rd, Madison WI 53719. Tel: 608-271-1100 or TWX: 910-268-2745.

Scully 250, used 1 month, excel cond. original carton. Key Code 1-46.

Ampex MM1100, 16 track with fresh head stacks, remote sync, excel. Key Code 1-41B.

Ampex 3200 duplicator, master and 3 slaves, totally remanufactured to new cond. w/many improvements. Key Code 1-39.

Revox A-77 (3) one in portable frame, gd. cond. Key Code 1-35.

Telex II copier. Key Code 1-30F.

Ampex PR-10 F.T. recorder in case, just overhauled in top order. Key Code 1-30A.

Uher 9500 slow-speed logger, 1/4 trk, 7 1/2-5/32 ips stereo or 4 mono chs, \$300. C. Coleman, KGAB, Box 5053, Ventura CA 3003. 805-647-0634.

Scully capstan motor, 7 1/2 & 15 ips, factory recond, w/new bearings and new capstan shaft, for 284 series. Key Code 1-73G.

Ampex 440B, 1", 8 trk, gd. cond. Key Code 1-1C.

Teac TCA-42, 4 channel, 2 avail, one w/custom sync. Key Code 1-36.

Ampex PD-10 2 trk duplicator, 3 slaves in cabinet. Key Code 1-30G.

Ampex 960 stereo in portable case. 2T erase/record, 2T or 1/4T play, w/documentation, excel. cond., trade for Maggie PT-63. Key Code 1-31.

Ampex 601 F.T. recorder in case, just overhauled in gd cond. Key Code 1-30B.

Scully capstan motor, 3 3/4 & 7 1/2 ips factory recond, w/new bearings and new capstan shaft for 270 & 280 series. Key Code 1-73H.

Ampex 602-2, like new. Key Code 1-9.

Ampex 602-2, Sony 850-2, Sony 650-2, all good operating cond. Key Code 1-7.

Sony 850 reel to reel, w/2 head nests, remote control, table console, very low hrs, excel cond. Key Code 1-42.

3M Selectake 1 (2), gd. cond. Key Code 1-20A.

Uher 4000 report, leather case, best offer. Key Code 12-19.

Magnecorder Mono 1/4" tape recorder, full trk, PT6-AH tape deck, PT63-J amplifier, PT6-M 2400 ft. tape deck. In cases, Pilotone and Rangertone sync heads and outputs, excel. Key Code 12-40.

Wollensak cassette duplicator (1) 2770, (2) 2780. Key Code 12-50.

Stellavox SP-7 stereo w/APS75, ABR, ASV, 3 SHD heads. Key Code 12-11.

Sony 777S, 4 trk record/4 trk and 2 trk playback, best offer. Key Code 12-19.

Tascam 70-4 transport, Tascam 70-4 1/2" head assembly, all equip is new, never used, still in original carton. Key Code 12-37.

Teac A-3340, 4 ch, simul/sync stereo, reel to reel w/6 alum 10" reels & ten 10" reels Ampex HF tape. Key Code 12-42.

Tascam 25-2 half trk recorder/reproducer, 7.5/15 in RusLang console, w/DBX options w/remote. Key Code 12-58.

Sony TC-550 stereo cassette deck/w Dolby. Key Code 12-58.

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.

Magnacord 1048, 2 channel. Key Code 12-13.

Crown 10 1/2" reel playback modified for 2 trk stereo, can be wired for mono record, best offer. Key Code 12-19.

Scully 280 full trk recorder/reproducer w/new Saki head stacks in consoles 7.5/15. Key Code 12-58.

Ampex 300-2 with tube electronics in rolling console. Key Code 12-62.

Ampex 351 Console Cabinets, (2), gd cond. Key Code 12-23.

Ampex AG440 full trk mono, less than 100 hrs, use w/remote control. Will sell or trade for a RCA BC7, 10 ch stereo console, working cond. Key Code 12-39.

Want To Buy

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.

Two track stereo Rec/PB deck capable of 10 1/2 reels. Key Code 1-21.

Ampex 440 series transport only in superb condition. Needed without capstan motor and heads (head assembly must otherwise be complete). Key Code 1-50.

Reel-to-reel recorder, any model. Key Code 1-17.

Otari 5050 or **Revox A-77**. Key Code 12-59.

Telex reel to reel/cassette duplicators, need immediately, must be new or slightly used. Key Code 12-10.

Scully 280, SP-10 or 14, gd cond, in console, 7 1/2-15 ips preferred. Key Code 12-32.

Sony TC-766-2 open reel. Key Code 12-36.

CATV-MATV EQUIP.

Want To Sell

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.

Save Hundreds, American made quality Head-Ends, V/V, U/V converters, camera modulators. Factory prices. Send \$5.00 (or letterhead). Dept. B, Box 809, Boynton, FL 33435.

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.

Blonder-Tongue #4923 or **Dynair TX-3A**, modulators for Channel 8, both audio and video. \$350 each. Inderwiesen Assoc, Box 7791, Orlando FL 32804. 305-295-3034.

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.

Jerrold 704B calibrated field strength meter, 54 to 220 MHz, gd cond. Key Code 12-23.

Want To Buy

10 watt FM translator, any input or output freq., does not have to be operable. Key Code 1-61.

MDS antennas & down-converters. Key Code 12-44.

CONSOLES

Want To Sell

MCI 24x24 console, **MCI 16 trk**, **Ampex & Scully 2 trks**, **Urei 1176**, **LA3A**, **Eventide DDL**, **Phasors**, **Omni**, **Echo**, **Neumann**, **E.V.**, **Sennheiser**, **White Eq.**, **Crown**, **JBL**, etc. Key Code 2-1.

Tascam Model 5 mixer console, new. Key Code 2-58.

Gates Dynamote remote mixer. Key Code 2-61.

Gates Yard, 8 channel, mono, spare tubes, manual, external power supply, gd cond. Key Code 2-15A.

Yamaha 16 x 4 excellent cond. Key Code 2-36.

Gates Top Level M 6467 mixer. Key Code 2-61.

Gatesway M5133A, 8 input, mono console, manual, excel. Key Code 2-26B.

Electrodyn 709 mods., **ACN's**, **Line amps**, **HW600** faders, all parts for console. 24x16. Key Code 2-54.

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 in parts. Key Code 2-54.

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

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

Shure M67 professional mixers (2) excel cond. Key Code 1-36.

Tapco Mod 6000CF mixer, excel. Key Code 1-30.

Ampro AC 8 SB stereo 8 mixer console, excel. cond. Key Code 1-75A.

Automated Processes 1604, perfect cond. Key Code 1-62.

RCA BC-2B console. Key Code 1-53.

Ampro AC 8 MB mono 8 mixer console, excel. cond. Key Code 1-75B.

Altec 9 in, **Quad** (4), stereo (2), mono (1), out. 4 echo sends, 2 cue, tone, etc. All Altec, RCA preamps, line amps, power supplies, API meters (7), Altec mic transformers (20), etc. Tube type. Will trade for any 1" VTR Editor, Camera, TBC, etc. (color). Key Code 1-3.

Western Electric 25B mixing console, tube type w/power supply, 7in, 2 out. Key Code 1-28B.

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.

Bogen mixer-preamplifier, 2 each with 5 mic-inputs, high & low impedance output, both in fair cond. Key Code 1-66.

API 1604 console, 12x4, expandable to 16x4, 10/550A, Eq, 2 comp/limiters, 8 trk monitoring. Key Code 1-41D.

Langevin stereo pan pots (2) S.L.P.P. -701, excel. cond. Key Code 1-36.

Sparta A-15 audio console. Key Code 1-34.

Sony MX-16 mixer, excel. cond. Key Code 1-30C.

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Gates Producer four pot solid state audio console, like new cond. Key Code 1-55.

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

Stellavox AMI-48 w/limiter, w/line outputs (2 ch) and SLE-B 2-ch. Key Code 12-11.

RCA BC-19A consolette (stereo), very gd shape. Key Code 12-36.

Grommes Mixer Pre-Amp 65M, 5 hgh gain chs, 1 low gain ch, master control, treble, bass control, VU meter, etc. Key Code 12-40.

Sony MX777, stereo, four mic in/two line in all Cannon con, best offer. Key Code 12-19.

Shure M67 mike mixer. Key Code 12-33.

Tascam Model 5A console w/ESE 4 digit timer. Key Code 12-58.

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.

Collins 212G-1, 10 ch audio console, gd cond, with extra modules included. Key Code 12-61.

Gates SA-40, tube type, with book and some parts, now on air, FM main control room, available Jan 1980. Key Code 12-65.

Want To Buy

Audio console, 6 input or more, stereo, any make, tube or not. 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.

RCA 76-B2 console power supply. Key Code \$12-9.

RCA BC-7A console for parts need not be in working cond. but repairable. Key Code 12-27.

Mixer, stereo console (5 channels or more), any cond. Key Code 12-56.

Collins 212J-1 remote console, will pay premium price if in gd shape. Key Code 12-36.

G.E. BC-1-A parts including pre-amp chassis complete. V.U. meter, original. Key Code 12-9.

In Canada call United Video
613-741-5554

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

In Mexico call IER
714-459-3691

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DISCO & SOUND EQUIP.

Want To Sell

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.

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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/power 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.

Anvil flight cases, 20 hole mike case. Key Code 1-22C.

Echo Plex w/foot switch. Key Code 1-14C.

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.

Technics by Panasonic speaker stereo systems, woofer mid-range, tweeter, gd. cond. Key Code 1-66.

Yamaha PM-400B. Key Code 1-30.

Anvil utility case. Key Code 1-22D.

Mutron Octave Divider. Key Code 1-14D.

Sansui QSE-5B 4 ch. encoder. Key Code 1-1.

Orban 111-B stereo reverb. Key Code 12-58.

DBX 3BX noise reduction system. Key Code 12-58.

Dahlquist Bi-Amp crossover Model LP-1. Key Code 12-58.

MXR Mini Limiters (4), new, MXR Auto Flanger (1), new. Key Code 12-58.

Auratone C-5 mixdown monitors (pair). Key Code 12-58.

Whirlwind snake 8 mics/3 sends, 100' length. Key Code 12-58.

Bose 901 speaker and equalizer (1). Wood cabinet, good condition. Key Code 12-4.

Pioneer PT-222F-5 Tweeter, new (1). Key Code 12-25.

Murasound by Whitley Elect. speakers, (2), each contains a 12" & 5" speaker. Attractive deep box. Key Code 12-40.

A/B Systems LED power level meter (stereo). Key Code 12-58.

Phase Linear 1000 noise reduction system. Key Code 12-58.

LP Jacket Fabricating Plant, sacrifice. Key Code 12-22.

Headphone box/w/individual 1 pads, custom made. Key Code 12-58.

Acoustic Research AR4X speakers (2), new with warranty cards and oiled walnut cabinets. Key Code 12-65.

Ampex, Scully, 16 in, 16 out board, complete 8 trk recording studio, excel sound, all related equip. Key Code 12-22.

JBL 4313 studio monitors (pair). Key Code 12-58.

Switchcraft 96 jack TT pay with 18 cords. Key Code 12-58.

Peavey SP-1 cabinets (2). Excell cond, \$600 for both. G. Hutchins, Hutchins Sound, 34 Indiana St, Bristol VA 24201. 703-669-1737.

Baffles (custom-built), wood, fiberglass, gypsum board and acoustical tile construction, good condition. Key Code 11-23.

Braun LD 300 Speaker systems (miniature), 1 pair. Key Code 11-25.

Marantz Imperial 7's, 3 way speaker system (cab dam.), 1 pair. Key Code 11-25.

DB systems triamp crossover. 120Hz & 3500Hz. Frequencies can be changed. Key Code 11-43.

Lansing 4310 control monitor speaker systems (2). Three-way, one unit needs a new mid-range control. Good condition. Will sell as a pair only. Key Code 11-23.

Duncan 201 SA2 slide faders, 25,000 ohms, mono, like new. Also, Duncan slide fader w/cue switch and Duncan slide faders, stereo, w/cue switches. Key Code 11-23.

Altec 604E Big Red Monitors with Mastering Lab X-over, 1 pair. Key Code 11-25.

Voice of the Theater copies with Altec drivers (new) (2). Key Code 11-25.

Altec 604E duplex speaker in utility cabinets (2). Key Code 11-33.

Custom built horn loaded sound reinforcement speaker system, using JBL woofers and tweeters, and similar midranges, mint. Key Code 11-43.

Magnavox SE-2515 speaker systems (2). 10" woofer, 3½" tweeter. Used very little, new cond. Will sell only as a pair. Key Code 11-23.

JBL 075 ring radiator (tweeter). Key Code 11-25.

EV Interface A's with passive EQ unit, 1 pair. Key Code 11-25.

Shure M63 Audio master EQ unit. Key Code 11-25.

Altec Lansing 417 12" musical inst. speaker. Key Code 11-25.

JBL N1200S crossover network. Key Code 11-25.

Sony SQ 1000 Quad decoder. Key Code 11-25.

JBL 4341 monitor speaker systems, 4 way, walnut cabinets, pair. Key Code 11-76.

Koss K/6 stereo headphones, like new. Key Code 11-23.

EV S-15-3 stage PA speakers (newest model), 1 pair. Key Code 11-25.

Phase Linear 700 in rack frame with fans. Key Code 11-25.

SAE Model 8 digital tuner. Key Code 11-25.

Eventide digital delay line; perfect condition. Key Code 11-25.

Tapco 6200B, 6 in Bal inputs, like new condition (2). Key Code 11-55.

Want To Buy

Reverb, reasonable. Key Code 2-5.

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

Micro-Trak arms, 12" (2 or 3), gd cond., buy or swap old mikes. Key Code 1-19.

Dolby A, 8 trk of 22 & 44 to fill M16 rack. Key Code 1-41.

Pioneer Tweeter T-309 for Project 60A speakers. Key Code 12-25.

LIGHTING EQUIP.

Want To Sell

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.

BEE Announces ... The British Connection February '80 Listings From London

Consoles—

- Neve 24-16-16, 6 echos with eq, 6 lim/comp, digital clock, etc.
- Neve 30-16-24
- Amek 2000 console 20-16
- Cadac 28-24-24 L console
- Sound Techniques 28-8-24

Recorders—

- MCI JH428 w/20 modules fitted
- MCI JH428 w/28 modules fitted
- MCI JH100 24 tr w/autolocate
- MCI JH114 16 tr w/autolocate
- Studer A80 MK 1, 16 tr, 7000 hrs
- Studer A80 MK 2, 16 tr, 2000 hrs

Broadcast Equipment

Exchange

PO BOX 1238, ARLINGTON, VA 22210
800-336-3045 (in Virginia, 703-525-0400)

Circle 118 on Action-gram.

- 3M M56, 3 avail, 1 w/selectake
- Scully 280, 1" 8 track
- Scully 280, 1" 4 track

Other—

- Dolby A360 noise reduction units
- Dolby A361 noise reduction units
- Jackfields, 20 holes/row, 19"
- Neumann KM86 microphones
- Yamaha CP70B, electric grand piano
- Studer C37 stereo trans. elec.
- Studer J37, 8 tr, 1", tube elec.
- Philips Pro 51 stereos
- Studer A62 stereo

FEL and FAD lamps (4 new), and others sale less than 50% of retail. Key Code 1-

LIMITERS

Want To Sell

Kahn Symmetrapeak, like new, w/manuf. Key Code 2-26A.

Urei LA-4 limiter/compressors, new. Key Code 2-58.

Urei LA-3A (2), leveling amps, new, r. used. Key Code 2-41K.

Trident Parametric Eq, slightly used. Key Code 2-54.

Gates dual limiter stereo. Key Code 2-6

Spectrasonic 610 Complimiters (2), e cond. Key Code 2-33.

Gates Stay level, model 994-6629-001 Key Code 2-61.

CBS 4110 Volumax, 4 yrs old, excel c stereo, recently inspected. Key Code 1-6

Gates 6631 limiters, stereo pair. Key Code 24.

Collins 26U-2 FM Limiter. Key Code 1-7

CBS 4450A Audimax, 4 yrs old, excel stereo, recently inspected. Key Code 1-6

Gates SA-39B limiter amplifier. Key Code 1.

Altec 438-A Limiter (working w/s meter). Key Code 1-30D.

Dorrough Tri-Band Compressor/Lin w/pink noise test generator and both stan & optional high freq. enhancing limiter ca like new. Key Code 12-61.

Kahn Symmetrapeak. Key Code 12-64.

CBS 400 Volumax. Key Code 12-44.

Urei LA-4A compressor/limiters (2). Key Code 12-58.

Harris AM peak limiter, solid state. Key Code 12-64.

Altec 9473A, solid state, gd cond. Key Code 12-23.

CBS 444 Audimax. Key Code 12-44.

Wilkinson solid state AGC and limiter, 2- old. Key Code 12-66.

Electrodyne Compressor/Limiter, M CA700, excellent condition. Key Code 12

Urei-BL40 modulimiter. CBS 4500 pres EQ. Key Code 11-39.

Audimax & Volumax, AM & FM (older), others. Key Code 11-8.

Urei LA-3A peak limiters (2). Key Code 11

Marti CLA-40H compressor/limiters (matched pair). In use. Key Code 11-18.

CBS FM Volumax 4110 excellent condit Key Code 11-69.

Audimax stereo model 4450A, also Volu model 4110, both excellent condition. Code 11-13.

BL40 AM limiter, mfg. specs. w/ser manual. Key Code 11-32.

Harris Solid Statesman FM limiters m M6631, matched pair for stereo, very g condition, 2 yrs old. Key Code 11-70.

CLE-sound brightener compres limiter/expander, stereo, excellent condit Key Code 11-6.

Gregg Labs tri-band limiter and AM p limiter combo #2431/2612. Like new, use hour, w/manual. Key Code 10-52.

Want To Buy

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

CBS Automax, stereo. Key Code 1-53.

Limiter (AGC), stereo or stereo pair, for F Key Code 12-56.

MICROPHONES

Want To Sell

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

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

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

800-336-3045

New Listings are in *Italics*.

The Exchange The Exchange The Exchange

ECM ... WTS ... CONT.

A DX77, used, in gd cond. Key Code 2-64.
 '8, ECM-22, MD421-U-DIN, KM54, 86, KM85, Z-48 (U-87). Key Code 2-54.
 ire SM33, and Shure SM 61, new and rly new. Key Code 2-64.
 ire SM-54 mikes, gd. cond. Key Code 2-

1751, nearly new. Key Code 2-64.

sc 670-B ribbon microphone. Key Code 2-

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

MAKES FROM STOCK!
 (AKG/EV/SONY/SHURE/SENNHEISER)

Sound Solutions

DETROIT'S
 PRO-AUDIO WAREHOUSE
 (313) 739-7020

ny ECM-33P (8) new, studio electret denser microphones, battery or phantom ering. Key Code 2-52B.

3 D1000E, new. Key Code 2-64.

stro Voice RE 15, RE 11, 666 (4), 664 (2), tgun, mike stands, and booms. A. Papa, -768-4604 or 213-399-9069 or J. nastasio, 609-424-2352 or 215-546-8.

stro-Voice CS-15 professional electric denser microphones including power lies (2), new. Key Code 1-73C.

A mike boom, Model M-2-MD-U, 33" h on 12" stand, new. Key Code 1-54.

mann U64 ns 1183 w/power unit and es. Key Code 1-12.

as large boom stands on wheels (4). Key e 12-58.

3 451 EB microphone w/C-1, C-5 es. Key Code 12-58.

y mike boom for studio work. Key Code 12-

as stands (2). Key Code 12-58.

A lavalier w/cable, Model BK6, American 130, no cable. Key Code 12-40.

ny ECM 33F condenser mics (2), like new. Code 12-45.

3 stand. Key Code 12-58.

A 10001A's (KU3A), RCA 44B, PML rrl), Key Code 12-4.

hseiser MD-421 U microphones (3). Key e 12-58.

1B's (2), in excel. cond. Key Code 12-13.

stro Voice 655, new cond. Key Code 12-

AKG, Audio Technica, Beyer, Calrec, Clear-Com, Edcor, ElectroVoice, JVC Sennhelsler, Shure, Sony and Vega. All available from Full Compass Systems, 5729 Seybold Rd, Madison WI 53719. Tel: 608-271-1100 or TWX: 910-268-2745.

ny ECM-22 condenser microphone, works l, good cond. Key Code 11-23.

as banquet stand with 13" gooseneck and D base, new. Key Code 11-23.

re 545 microphone, less holder, like new. Code 11-23.

mann U-47 FET microphone w/power ply. Like new. Key Code 11-41.

stro Voice 666 dynamic microphone. An e, but a goodie. Works fine. Key Code 11-

RE-11 mikes (4), EV RE-16, Altec 650 (2), Shure 565 (3). Key Code 11-25.

mann, AKG, Telefunken tube rophones. Various others. Key Code 11-

Atlas microphone stand with 721D base. Includes an Atlas BB-1 baby boom. Good cond. Key Code 11-23.

EV-RE-10 microphone, excel. cond., EV-RE-50 (Lavalier) excel. cond., Shure 548SD microphones (2), matched-pair, excel. cond. Key Code 11-55.

Atlas microphone stand (large) w/669 base and BB-1 baby boom. Key Code 11-23.

Neumann power supply for Neumann U49 mike. Key Code 11-25.

Want To Buy

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

Telefunken 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.

Mounting yoke (fork) and stand cushion for RCA BK-5B. Key Code 1-31.

Broadcast quality microphones, any model. Key Code 1-17.

Wireless microphone at good price. Key Code 1-35.

RCA 77D and DX microphones, working or not also want parts for same. Key Code 12-9.

MISCELLANEOUS

Want To Sell

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.

7' open racks. Key Code 1-76.

FCC Radio operator licensing curriculum complete test questions and answers for FCC exams element #3, 2nd class license and element #4, 1st class license. Will sell to any school training facility. Key Code 1-47.

Vacuum capacitors (variable) 7500 volts/8008 mercury vapor rectifiers. Key Code 1-76.

Cooke Master clock system, including 2 impuse studio clocks, 2 each 8-event programmable timers and stand-by battery. Key Code 1-43D.

Fairchild solid state power suppliers (5), 667T24-1 (3), dual output, plus or minus 15-24 V, 667AA(1) and 667II(1). Key Code 1-75D.

Control Data Corp. Model LGP-30 stored program computer, medium-scale capability, single address, 4096 word magnetic drum memory, w/punched paper tape permanent file, access less than 15 Ms, consists of memory unit, arithmetic unit and control unit. Sell or exchange for studio equipment. Key Code 1-63.

Rack cabinets, 19", one 28" h, one 10½" h, one 66" h, and one 78" h, all in gd cond. Key Code 12-51.

BSR Metrotech, cassette type tel answering machine, bell jacks, includes specs & warranty, best offer. Key Code 12-19.

Patch Bays (2), standard 19" width. Key Code 12-33.

Switchcraft phono patch bay, 48 jack. Key Code 12-58.

Equipment rack, 19½" custom made, wood/w/power, various assorted cables, various lengths. Key Code 12-58.

Want To Buy

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

Rack mounted metal cartridge racks, hold 40 carts each. Key Code 1-69.

Patch cords, double plug, not over 3 feet long. Any condition as long as repairable. Key Code 12-9.

API Model 561 'B' scale VU meter (2). Key Code 12-27.

Rotary Attenuators, stereo, 600 in/out, 20 step, 2DB/step w/cue, need 10. Key Code 12-27.

MONITORS

Want To Sell

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 (tuneable), excel. cond. Key Code 2-41C.

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

Gorman-Redlich 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, 805-647-0634.

Nems Clarke Model 112 phase monitor, set unit for three towers, gd. cond. Key Code 1-23.

General Radio Model 1931A amplitude modulation monitor. Key Code 1-1.

McMartin TBM3000 and 3500 frequency & modulation monitors in gd cond. Key Code 1-53.

Metron Model 510 AM frequency monitor. Key Code 1-1.

Gates M-5693 AM modulation monitor. Looks new but doesn't work. Key Code 1-75C.

Gates model M-5693 modulation monitor at gd price. Key Code 1-59.

Hewlett-Packard 335B freq. mod. monitor on 94.3 MHz, now in service, but needs work, with book. Key Code 12-65.

McMartin TBM-3000 FM frequency monitor. Key Code 12-66.

Rust 108 (2) complete w/book. Key Code 12-51.

Belar BW-75A FM modulation/frequency monitor, new cond. Key Code 12-15.

McMartin TBM-3500 FM modulation monitor. Key Code 12-66.

Gates M-5693 modulation monitor, needs work, make offer. Key Code 12-44.

General Radio Frequency Monitor on 1430 KHz, Model 1181-A. Key Code 12-46.

Want To Buy

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

Modulation monitor for 89.3MHz FM, stereo monitor; EBS monitor/encoder-decoder, fixed or tunable. Key Code 2-32.

Belar FMN-1 and FMS-1 and AMM-1. Key Code 2-38.

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

Type approved modulation monitor for 89.3 MHz. Key Code 1-58.

FM modulation and frequency monitors, prefer 98.3 MHz. Key Code 1-25.

McMartin TBM2000A or B SCA monitors. Key Code 1-11.

GR Model 1931-A monitor in gd cond or easily repairable. Key Code 12-30.

MOVIE PRODUCTION EQUIP.

Want To Sell

Magnatech series 200 dubber equip., 4 Turner 4L406 interlock motors, 4 Bodine NCH34 sync motors-chassis mounted and wired, 4 35mm sprockets, misc. hardware, 4 complete control panels. Key Code 1-56.

Moviola editing machine, blue mag and opt, excel cond, zoom door and Auricon finder. Key Code 12-41.

Magna Tech Model 31 compressors. Key Code 12-4.

Bell & Howell Model 545, 16mm sound proj., like new w/cover & spare lamp. Key Code 12-21.

Auricon Pro 1200 camera, 2 mags wired for mag sound, cables, cases, all in mint cond, new mag head, M11 amp, also opt amp, hardly used. Key Code 12-41.

Bell & Howell 200EE 16mm movie camera w/case, inoperative electric eye, fair-to-poor cond, good for parts, sold as is, case is fairly good. Key Code 12-63.

Arri-M & Beaulieu 16mm cameras, zoom lenses, tripods, Spectra meter, sound readers, Nagra-3 playback, lights, other prod equip. Key Code 12-40.

Auricon Pro 600 movie camera, 2 mags, opt amp, 1 lens, cases, mikes, cables, like new cond. Key Code 12-41.

Dolly, Houston Fearless metal-portable. Key Code 12-41.

Want To Buy

Neumade, HFC, or Moviola 16mm film timer-footage counter combo w/large single hub, left-to-right, teeth in back, in gd cond. Key Code 12-63.

Neumade-Griswold model R-3, 16mm film splicer with 1/16" splice-bar, in gd cond, well-used OK, should be complete. Key Code 12-63.

RECEIVERS & TRANSCEIVERS

Want To Sell

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.

Motorola Mocom 70 System, one 45 W. VHF base station w/PL, and four 30 W. VHF mobile units, w/PL. Inuse less than 2 yrs., absolutely mint operating condition. \$3750. T. Bleiman, Spectronics Inc, 1009 Garfield St, Oak Park IL 60304. 312-848-6777.

Johnson repeater w/four Comco bases on 461.975 rec and 466.975 xmt, gd. cond. Key Code 1-70.

Henry Radio "Tempo-5/FMH" 5 watt hand-held transceivers, w/161.730 and 161.760 xmls (6 ch capacity w/drop in NiCad chargers). Key Code 1-43C.

McMartin TR66C SCA receivers. Key Code 1-11.

Motorola HT-220 Slimline-VHF, charger, case, perfect operating cond. Key Code 12-28.

Marti VHF remote pickup receiver tube type 160 MHz dual frequency. Key Code 12-66.

VHF-FM Radiotelephone's 161.07 MHz including Comco base station, Aeroton base mobile, and a variety of G.E. mobiles, all sold separately or as package. Key Code 12-66.

Motorola HT-220 Omni-Housing, 6-ch VHF, w/accessories, mint cond. Key Code 12-28.

Symmetrics RCC mobile telephone, full duplex, w/manuals, excel cond, interrupted tone signalling. Key Code 12-47.

Motorola PA8266 FM receiver chassis complete w/100V supply, mini box w/volume squelch plugged in on 39.1 MHz for police monitor. Key Code 12-51.

Motorola, 5 watt Mocom 10 D31AAN, 25-30 MHz transistorized, type approved FM transceiver. Key Code 12-57.

McMartin SCA receiver solid state. Key Code 12-66.

Want To Buy

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

Canada call United Video
 613-741-5554

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

In Mexico call IER
 714-459-3691

The Exchange The Exchange The Exchange

REMOTE & MICROWAVE EQUIP.

Want To Sell

Reytheon 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.

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

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

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.

Narda N62055-6 GaAs FET amplifier, 8 to 12 GHz, gain: 25dB, NF: 7.5dB, power output: #10dBm, 15VDC. Key Code 12-14.

Moseley TRC15A (1), updated to IC sockets. Key Code 12-18.

RCA Microwave receivers (3), TVR-1A, RCA Microwave transmitters (3), TVT-1A, gd working order when removed, complete w/spare tubes and spare units, modifications to 1B and 1C series, one transmitter has a practically new head, best offer. Key Code 12-31.

Want To Buy

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.

Moseley STL PCL 505 or comparable unit. Key Code 1-72.

Remote transmitter 30 or 40 watts for 450 MHz frequency range. Key Code 1-77.

Marti remotes for 450 and 160 MHz bands. Key Code 1-70.

STL 950 band tuned to 948 MHz, gd. working cond. Key Code 1-70.

STL 950MHz and remote control for FM station, complete w/antennas and SCA, mono or stereo. Key Code 12-65.

Remote Control, for FM, studio & transmitters units like "Rust" units. Key Code 12-56.

S.T.L. composite. Moseley PCL-505 preferred. Key Code 12-3.

STEREO GENERATORS

Want To Sell

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

Gates Model 994-6533-001 Solid State mint cond., \$300. D. Castellano, Capitol Broadcast Exchange, 3469 W Benjamin Holt Dr, Stockton CA 95207. 209-957-1761.

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

Standard Electronics Model 935, tube type, \$200. D. Castellano, Capitol Broadcast Exchange, 3469 W Benjamin Holt Dr, Stockton CA 95207. 209-957-1761.

Pilot counter. Key Code 11-15.

RCA BTX-1B SCA generator for BTE-15A exciter. Key Code 11-27.

Wilkinson stereo generator. Key Code 11-15.

Want To Buy

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

McMartin B103 SCA generator. Key Code 1-11.

Stereo Generator for Gates M-6095 exciter, any cond, or for REL 518A-DL transmitter. Key Code 12-56.

SWITCHERS (VIDEO)

Want To Sell

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

Telemet Model 7945 air/production switchers (2), vertical interval wipe effects, audio follow, no rack space needed, \$4600 each. D. Castellano, Capitol Broadcast Exchange, 3469 W Benjamin Holt Dr, Stockton CA 95207. 209-957-1761.

Dynair 5100 series 40x10 remote control, \$2400. Dynair model 15X10C(2), \$1350 each, all fully tested. D. Castellano, Capitol Broadcast Exchange, 3469 W Benjamin Holt Dr, Stockton CA 95207. 209-957-1761.

Dynair VS-153A prod. video switcher, color capable, remote controlled, 6 sync and 5 non-sync inputs, w/manual. Key Code 12-23.

Panasonic WJ-5500, internal color bars, sync gen, genlock, 1 yr warranty. Key Code 12-34.

Telemation, 5 units, TPS 8x2 video switcher, TPS 12x3 video switcher, TSE-100 screen splitter, pre select video switcher TVS 6x2 SE, Bdct CCU TMV-708. Key Code 12-21.

Want To Buy

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

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

TAPES CARTS & REELS

Want To Sell

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, 3/4" name brands, 60's, 30's, vinyls. Key Code 1-67B, C, D.

Scotch Tape Stock 1" for IVC machines. Key Code 1-10.

Videocassettes, 3/4", 30 minute lengths, like new. Key Code 1-10B.

U-matic videocassettes, 3/4", 60 minutes used. Key Code 1-10C.

Audio Tape, remaining stock of 3M, type 150, individually boxed 565 foot reels, 12 per sealed case, \$3.00 per case. Digitrak Communications Inc, 409 Fourth St SW, Hickory NC 28601. 704-322-1367.

Scotch Tape Stock, 1" for Ampex machines. Key Code 1-10.

Blank Cassettes (new) Audio-Magnetics standard quality duplicating tape, white sonic shells, 40 min. length. in factory-sealed cartons. Key Code 1-37A.

Reels & boxes, 5 & 7", several hundred, new, white. Key Code 12-58.

U-matic 3/4" cassettes, all brands, used, 60's, 30's, low usage. Key Code 12-29.

3M videocassettes, 60 min, like new, in plastic shipping cases, some with movies (24). Key Code 12-45.

Scotch 250/206/176/177, 2500 HPB, several cases. Key Code 12-58.

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

Want To Buy

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.

Cartridges in working order, any brand. Key Code 1-17.

Music tapes for Automation, must be in gd working cond. Key Code 1-59.

Fidelipac Carts, used, all sizes, loaded or empty, don't have to be clean, just salvagable. Key Code 12-9.

TEST EQUIPMENT

Want To Sell

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 1/2" EIA flange. Key Code 2-70.

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

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

H/P 206A audio oscillator(2) rack mount. Key Code 2-31A.

Weinschel pulse power calibrator, M/N: PCS-1B, 925-1225 MHz, gd cond. Also, precision step attenuator, M/N:70, 4 watt max. Key Code 2-35.

Nems-Clarke 120E field strength meter, recently calibrated, excel. cond. Key Code 2-41H.

H/P digital recorder, galvanometer w/analog output M/N 562A, Narda microwave meter M/N 440, Branson ultrasonic flaw detector M/N 50C. Key Code 2-35.

GR-1602B UHF admittance bridge. Key Code 2-70B.

Tektronix 1L5 spectrum analyzer, 50Hz to 1MHz. Key Code 2-70C.

HP654A Audio Generator, gd. cond. Key Code 1-18A.

HP400H AC meter, recent calibration. Key Code 1-9C.

Xedit 15P flutter meter, .05% range, excel. cod., used about 6 hrs. Key Code 1-18B.

Tektronix scope type 531A w/CA plug in, new CRT excel. cond. Key Code 1-15A.

Model 128 Exact analog linear sweep generator w/function generator. Key Code 1-2B.

Tektronix oscilloscope, type 524D, has built in time markers, includes 4 wheel Scope-Mobile. Key Code 1-40A.

Wavetek Model 3001-03, 1-520MHz, fresh factory calibration w/spare output module. Key Code 1-61.

Ballantine 302C portable AC meter. Key Code 1-9D.

HP-608D sig. gen, Wayne Kerr VHF admittance bridge type 801. Key Code 1-15.

Delta OIB-3 Impedance Bridge & RG1E receiver generator. Key Code 1-11.

Tektronix oscilloscope, type 543, include: plug-in Type CA dual trace, calibrated preamp plug-in Type L fash-rise, high gain, calibrated pre-amp, w/Scope-Mobile. Key Code 1-40B

Heathkit TS-4A TV alignment gen, working. Key Code 1-30H.

Sorensen QSB-6-15 laboratory regulated power supply, 5 to 9 volts at 15 amps, like new. Key Code 1-73D.

Sencore FC 45, 230MHz freq. counter, like new, manual, etc. Key Code 1-61.

Heathkit O-10 Scope, working. Key Code 1-30I.

GR1602B admittance meter. Key Code 1-9B

Hewlett-Packard 335B, modulation and frequency meter. Key Code 12-66.

Hewlett-Packard 608D signal gen., excel cond. Key Code 12-48.

Hickok CRO-5000, Solid State oscilloscope gd cond. Key Code 12-23.

Measurements 65B, URM-25, eldorad counter. Key Code 12-7.

Audio oscillator Wave Forms 401B. Key Code 12-66.

Singer FM-9 Hi-Band 450 service monitor needs new 1MHz standard. Key Code 12-57

Heathkit AG-9A audio generator. Key Code 12-66.

Tektronix type 531A scope w/CA dual trace plug-in, new CRT. Key Code 12-48

Want To Buy

Tektronix 528 waveform monitor. Key Code 2-37.

Wow & flutter meter, working w/N.A.B. weighting. Key Code 2-62.

Panaramic model AP-1 spectrum analyzer service manual and/or schematic. Key Code 2-62.

Field Intensity meter for AM band, 540 to 1600KHz, must be in gd cond. Key Code 1-52.

Heath or other intermodulation analyzer. Key Code 12-57.

Data Measurements Corp manual, type 8155 flutter meter (circa 1969), will pay for xerox and mailing. Key Code 12-48.

TRANSMITTERS

Want To Sell

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

Gates transmitter, 500 watt, Model BC-500-GY and related gear. Stu Wayne, WKEN, Box 553, Dover DE 19901, 302-674-1234.

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.

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

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

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

Gates MM-5394 10 watt FM exciter, spare crystal ovens, tuned to your frequency, \$550. D. Castellano, Capitol Broadcast Exchange, 3469 W Benjamin Holt Dr, Stockton CA 95207. 209-957-1761.

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.

The Exchange The Exchange The Exchange

TRANSMITTERS ... WTS ... CONT.

Illins Model 20V 1000 watt AM transmitter w/ tuned to 1460 KHz. Key Code 1-1.

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

Lytheon RA-1000 Am 1 kw transmitter in excel cond. Key Code 1-59.

Co 15A transfer switch. Key Code 1-9.

DA TV Model TTU-10 w/filterplexer, Ch 14, 2. Freq. Monitor, BW-4 demod, dummy load, r to poor cond. Key Code 1-57.

9TX-1A, 67KHz sub-carrier generator manual, \$300. C. Coleman, KGAB, Box 53, Ventura CA 93003, 805-647-0634.

Illins 732-A 1kw FM (2), re-built, perfect for ndby. D. Castellano, Capitol Broadcast change, 3469 W Benjamin Holt Dr, Stockton 95207. 209-957-1761.

Illins 300G AM Transmitter. Presently red to 1450 KHz, good condition, ready to go air. Key Code 12-2.

Power Transformer, high voltage, for Gates -1G has taps for 1000 or 250 watts. Key de 12-46.

Lytheon RA-1000 AM transmitter 1KW complete manual, in excellent condition. y Code 12-5.

A type BTA 1kw with 500 w cutback., can put in working cond w/minimal effort, nplete w/parts, up haul, make offer. Key de 12-20.

uer 707, 1KW, on air, 1600KHz. Key Code -17.

Illins 310Z1 FM exciter in good condition spare modulator card. Stereo generator, eds work. Key Code 11-8.

4/Wilkinson exciter, 10 watt, less pwr dply, working when removed. Key Code 11-

Illins 20H 1 kw., AM transmitter. Excellent, built w/solid state power supplies, vacuum k capacitor, new audio circuitry, new modulation transformer & reactor. Easily dles 125% pos. peak. Will tune to your quency. Now on air. Key Code 11-67.

tes BC-1E, 1KW AM transmitter, great ndby, spare tubes included. Key Code 11-

ystals for RCA BTA-1R series (2), 1300 kHz. y Code 11-28.

OKW motor generator, ultimate in line lation. Key Code 11-48.

Lytheon 250-A 250 watt AM transmitter. o condition. Solid state power, redesigned io. 125% positive peak modulation. Will e to your frequency, now operating. Key de 11-67.

3 TX2-20 carrier current transmitter interface unit on 535 kHz, will accept any 1 band crystal, 600 ohm input. Never used. y Code 11-24.

tes BC-1F, good condition, presently tuned 1330kHz, incl. 500w cutback, extra clean. y Code 11-51.

stern Electric 1937, 50 KW AM nsmmitter, \$11,000. Call (800) 336-3045.

Want To Buy

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, 1 KW-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.

250W FM transmitter (1965 or later), mono or stereo, for remote control, prefer tube tupe PA, solid state exciter. Key Code 1-60.

Type approved power Amp for 10 watt exciter, 250, 500 watts. Key Code 1-58.

McMartin B103 SCA generator. Key Code 1-11.

Need 3KW in "on air" condition. Key Code 1-25.

5KW AM Transmitter, less than 10 yrs old. Key Code 1-51.

FM transmitter 1KW without exciter, have exciter & stereo generator already on hand, want gd cond and operating. Key Code 12-26.

FM Transmitter, 1 to 3 KW, junk, no exciter. Key Code 12-7.

FM Exciter, mono or stereo, must be direct FM. Key Code 12-65.

FM transmitter, 100, 250 watt. Key Code 12-50.

TUBES

Want To Sell

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

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

Eimac 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.

Eimac 4CX3000A, new (2). Key Code 12-7.

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

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

892R vacuum tube in gd cond. Key Code 1-76.

G.E. or Sylvania 6P7. Key Code 1-35.

TURNTABLES & LATHES

Want To Sell

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

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

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

Gates turntables (2) w/Micro-Trak tone arms, model CB 500. Key Code 2-61.

Russco & 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.

Technics Direct Drive SP-10, SP-15, SP-25 and SL-1200 Mk II. In stock and available from Full Compass Systems, 6729 Seybold Rd, Madison WI 53719. Tel: 608-271-1100 or TWX: 910-268-2745.

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

Micro-Trak Model 303 12" 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.

Russco 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.

Shure SM-64 phono preamps (2). Key Code 12-58.

QRK Studio Pro turntable w/o arm. Key Code 12-58.

QRK solid state pre-amp's (2). Key Code 12-66.

Russco Studio Pro turntable w/o arm. Key Code 12-58.

Technics Turntables at the lowest prices anywhere. Call Ramko Research collect (916) 635-3600.

Gates 12" T.T. with tone arm and built-in pre-amp's. Key Code 12-66.

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.

Gates 12" TT/Gray Micro-Trak arm (1), Gates 16" TT/Gray Micro-Trak arm (1). Key Code 12-44.

Gates/Harris Transcription turntables, CB-77 (2), completely rebuilt, painted, new rollerwheels, excel cond. Key Code 12-36.

Rek-O-Kut Rondine turntable w/Gray 216 arm. Key Code 12-40.

Want To Buy

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

Turntables (2), arms & pickups, must be in good working order. Key Code 2-7.

Gates CB77 turntable motor assembly. Key Code 2-46.

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, Russco, QRK, Technics preferred. Key Code 2-38.

RCA MI-11883, 45RPM conversion kit for 70C/D turntable, complete, gd. cond. Key Code 1-31.

Gates M-6442 phono-preamps (2) or more, in original shape, or close as original. Key Code 12-36.

RCA MI-11874 pickup for MI-11885 light weight tone arm. Key Code 1-31.

Turntables, prefer two units, any model. Key Code 1-17.

Rek-O-Kut L-34, 2 speed turntables in gd cond (2). Key Code 12-46.

Turntables CB-77 that can be rebuilt to original factory specs, will make reasonable offer, w/or w/o tone arms. Key Code 12-36.

12" turntables, 2 or more, with or without arms, cartridges like QRK, Sparta, etc. Key Code 12-56.

QRK 16-inch, 3 speed TT w/sync motor, in gd cond, would prefer table w/flushtop platter, not dished style, need one only. Key Code 12-63.

Gray viscous damped tone arms, 12" (2). Key Code 12-9.

TV FILM EQUIPMENT

Want To Sell

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

Kodak VP-X Super 8 film videoplayer. Transfers Super 8 to broadcast quality 3/4" tape. For use with external sync. \$1200 or offer. Jim Ellsbery, 3519 W. 229th St, Torrance CA 90505, 213-326-1769 or 213-466-6464.

WANTED: 16 & 35mm 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 Eidaphor TV projector. Priced to sell. International Cinema Equipment Co., 6750 N.E. 4th Court, Miami, FL 33138 - 305-765-0699

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.

Film Chains including B&H 614, Telemation TMM 203, 203B and RCM 22 and others. Shibaden FPC-1000, Gates TE-201 cameras. Viscount 1140 switcher plus Sparta A-20b & EP-20B. Call or write for more info. G. Busby, Oceanic Cablevision Inc, 2669 Kilihau St, Honolulu HI 96813, 808-836-2888.

TP-11 Multiplexer, no cameras or projectors. Key Code 1-49A.

Selectroslide Mod 322 TV slide projector, excel. Key Code 12-53.

Athena 4000 16mm telecine projector, factory refurbished, with lens. Key Code 11-63.

Kodak VP-X Super 8 Film Videoplayer for use with external sync. New cond., excellent working order. Key Code 11-7.

Eatman TVM100A super-8mm projector, like new, less than 50 hrs use, with lens. Key Code 11-63.

B&H model CDVM 16mm proj. w/remote control stand. Key Code 11-3.

Want To Buy

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

RCA TP7A 35mm slide projector lens, 9" fixed focal length. Key Code 11-3.

16mm fim projectors (2) Bell & Howell 614 EMVS, and two RCA slide projectors. Key Code 11-36.

VIDEO PRODUCTION EQUIP.

Want To Sell

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

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.

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For any Key Code Names and Addresses.

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613-741-5554

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VIDEO PRODUCTION ... WTS ... CONT.

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 Newark Rd, Zanesville OH 43701. 614-453-0762.

RCA TA-9 stabilizing amplifier, tube type, color proc amp with 280V supply. Key Code 1-44.

Two Versatile fully tested EFP Vans. One contains VR2000. Other 3/4" cassette equipped. D. Catellano, Capitol Broadcast Exchange, 3469 W Benjamin Holt Dr, Stockton CA 95207. 209-957-1761.

TV Production Trucks (2), 40' truck, 3 Ampex BCC-1 Plumbicon cameras, RCA TR600 quad, American Data 558-3 switcher (quad split, rotary, soft wipes), 20 ch audio board, 24' truck, 2 Ikegami cameras, RCA TR61 quad, 12 ch audio, 3/4" 3800 Sony w/Microtime TBC, built-in generator. Key Code 12-52.

Telemation video test generators, group of 3 w/rack mount, TMT-101, 102, 103, Stairstep/Sin Squared/Window/Multiburst, gd cond. Key Code 12-23.

Telemation TSG-3000-GL color sync generator w/manual, built-in bar dot & blackburst generators & digital genlock. Key Code 12-23.

Automation Techniques, Inc. RAIM-1000 time base corrector, recently recalibrated by factory. Inderwiesen Assoc., Box 7791, Orlando FL 32804. 305-295-3034.

Vital PA-1 pulse distribution amplifier with power supply and rack, new. Key Code 11-21.

Complete color (3-V) studio package, including cameras, lights, switcher, audio, etc. Key Code 11-64.

Edutron CCD-1H NTSC time base corrector. Brand new, full warranty. Key Code 11-36.

Advent 7' projection; TV videobeam-1000. Now in use. Key Code 11-37.

RCA TO-4 TV waveform monitor, very clean. Key Code 11-47.

Sony remote RM410 never used. Sony tuner timer TT100 never used. Sony 4pc CCJ5 cable, 4pc CCJ10 32'. Key Code 11-44.

Microtime 1600 TBC w/Imag-Ex, new, warranty. Key Code 11-63.

Conrac CYB-17, 17" color monitors (2), make offer. Key Code 11-75.

Sony JB-2 never used. Character generator Video Data Systems T1000A used 20 hrs, mint. Key Code 11-44.

Video production equipment, complete color package w/Hitachi FP-1500 color camera, w/CCU, 50' cable, color bar generator, Panasonic 3/4" VCR model NV-2100, also Panasonic pb-only cassette, Davis & Sanford cradle head tripod w/dolly, RAIM-1000 time base corrector, 20 hrs Scotch 60 min cassettes w/shipping cases. Equip. two yrs. old. Key Code 11-53.

RCA TG 25-TA 25 special effects gen. Generates over 100 patterns. Make offer. Key Code 11-75.

Leitch VSS-160N/CSC-165N source synchronizer/color sync. comparator. Will synchronize remote source by dial-up phone line among other things. Key Code 11-10.

Panasonic chroma key generator AS-2000, used 5 hrs, mint. Key Code 11-44.

Want To Buy

Video DA's (complete unit). Key Code 11-50.

VIDEO TAPE RECORDERS

Want To Sell

Sony Betamax 7200 1/2" videocassette recorder, excel. Key Code 2-8.

JVC editing system, 3/4", incl.: (2) CR8300, (1) RM83. Key Code 2-17A.

Sony EV-320F VTR's (2), w/remote control and CLP-1A, \$250. J. MacAllister, Tufts Educ. Media Ctr, TV Prod. Dept, 136 Harrison Ave, Boston MA 02111. 617-956-6675.

Sony 3400 Portapak, \$300. J. MacAllister, Tufts Educ. Media Ctr, TV Prod. Dept, 136 Harrison Ave, Boston MA 02111. 617-956-6675.

RCA TR-5, lowband, working when removed. Key Code 2-30.

IVC 870 1" video tape machines (2), factory reconditioned, and TRI EA-5 editing controller for these machines. Key Code 2-40.

JVC CR6060U 3/4" videocassette recorder, \$700. Also Sony TT-300 video tuner-timer, \$200. Carleton Sarver, 256 West 88th St, New York NY 10024. 212-873-2953.

Sony 2600, mint cond. Key Code 1-67A.

Ampex VR-5000 1" Helical, new heads, low hrs, all Ampex mods incorporated, gd. cod. Key Code 1-64.

Sony 2860 VCR 3/4" U-matic (3) modified for Convergence editing system, like new cond, will sell individually or all three. Key Code 1-10F.

Eigen Video Disc, excel performance, Chroma III comp. color recorder/reproducer, 20-sec. capacity, forward or reverse, slow motion, freeze frame, CVS digital TBC, never used. Asking \$33,000 for immediate sale. K. Blair Benson, Video Corp of America, 231 E. 55th St, New York NY 10022. 212-355-1600, ext 292.

IVC series 800 one inch color video tape recorder w/slow-motion and stop-frame, pack mounting configuration. Key Code 1-73F.

JVC PV-4800U, 1/2" R to R color recorder, slo-mo, audio dub, 5" reel w/case battery, charger, PWR supply like new. Ke Code 1-44.

Allen Mod/Demod chassis, hi band model 1124 SW like new. Key Code 1-44.

Allen 1240/1241 channel switcher/equalizer like new. Key Code 1-44.

IVC 800 (2) not working but repairable and in gd cond. Key Code 1-15.

Sony 1000 VCR 3/4" U-matic player. Key Code 1-10D.

Ampex 5100's (2), 1-6,000, 2-7,000's, 1" VTR's. Will trade for 3/4" or 1" color VTR Editor, TBC, etc. Key Code 1-3.

Panasonic U-matic complete editing outfit w/NV9200, NV9500, NVA950, used, gd cond., \$5000. SounDesign, Box 921, Beverly Hills CA 90213, 213-276-2726.

JVC CR-6300U 3/4" recorder, low hrs. Key Code 1-16A.

Sony 1200 VCR 3/4" U-matic player. Key Code 1-10E.

Sony 2600 3/4" U-matic recorder players. Key Code 1-10A.

RM300 random access for Sony SLP-300, also Sony SLO-340 portable Beta deck. Key Code 1-4.

IVC-800 color VTR's (2) not working, both repairable, one like new, w/manual. Key Code 12-48.

Sanyo portable video cassette recorder w/camera, monitor/TV, cords and rechargeable Ni-Cad Battery, w/AC power supply/charger. High resolution electronic viewfinder on camera, play back on view finder, has built in mic with instructions, will swap for good color TV camera or Ampex 351 stereo 2 trk audio recorder. Key Code 12-9.

Panasonic NV3120 reel to reel video tape (color) in like new cond. Key Code 12-21.

NEC 8700, (2) 3/4" direct drive players, new, full warranty. Key Code 12-34.

Sony 1" EU320 (3), CLP-1B (2), CLP-1A (1), need alignment, \$1000 for the lot. Dan Mulally, KUMV-TV, Box 1287, Williston ND 58801, 701-875-4311.

Panasonic (3) NV-9100 player only, new, warranty. Key Code 12-34.

Ampex VR1000 transport, ideal for part for multi-trk audio recorder. Key Code 12

JVC 6300U demo, w/remote control, 1 cond, w/warranty card. Key Code 12-28.

Panasonic (4) NV-9200A direct c recorder, new, full warranty. Key Code 12

Ampex Mark III video heads, 2 ten mil. mil. Key Code 12-55.

Sony VO-1600 3/4" U-matic, very gd c used as a home machine, complete w/6 tape library, make offer. Key Code 12-29

Sony VP-1200, 3/4" U-matic c players w/automatic skew control, condition. Inderwiesen Assoc., Box 7 Orlando FL 32804. 305-295-3034.

Jatex VSEC 42T editing control unit, new, full warranty. Key Code 11-36.

JVC 6300-U, as new w/warranty remote control unit. Key Code 11-37.

JVC CR8300 3/4" U-matic VTR, 2 pc only 40 hrs, brand new in original boxes individually or all two. Key Code 11-44.

Norgren compressed air line dryer, 5 good condition. Key Code 11-3.

Minicom dropout profile recorder. Key 11-10.

JVC RM83U 3/4" U-matic editing for use JVC CR8300 3/4" U-matic VTR, brand used 20 hrs. Key Code 11-44.

TRI EA-5 edit controller interfaced to 8650 at present. Key Code 11-71.

Want To Buy

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

TR4 hi band color (1), ATC color. Key Cc 37.

Systematics VJB-12/VJB-3/VA automated cassette players with or w tape decks, Christian bdct application Code 2-34.

Sony VO2800, VO1600 with RF out. K7-2-37.

RM300 random access for Sony SLF also Sony SLO-340 portable Beta decl Code 1-4.

Sony AV-8400 or Panasonic NV-used/new portable recording outfit, B & color, also Sony 8600 or 3600 and B & color camera. Key Code 12-21.

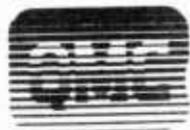
RCA TR3 or TR3 for spare parts, als headwheel panel cover & doors for TR Code 12-34.

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New Listings are in Italics.

ary FCC
 from page 11

of an applicant in the 15-year
 eding for a new AM station in
 is Angeles-Long Beach area and
 d a character issue which had
 eft untried for 8 years against
 licensee involving the business
 ities of a former 15%
 holder. The FCC deleted this
 on the basis that the
 holder had sold his interest and
 in no way benefit from
 =sement and that further
 on of that issue would be
 ful and contrary to the public
 st.

operate the stations consistent with
 FCC standards. The licensee had
 engaged in reciprocal trade dealings
 with its parent company to pressure
 other companies into placing
 advertising with RKO's stations as a
 condition of doing business with
 General Tire. In addition, the parent
 company had engaged in improper
 domestic political contribution,
 improper overseas payments and
 defrauding of affiliate companies.
 The matter will certainly be appealed.
 However, Group W, a Westinghouse
 subsidiary has been found qualified

to be a licensee although its parent
 had been found guilty of anti-trust
 activities and improper payments. A
 significant difference seems to be
 that Group W operates independently
 of it parent while the same person
 headed the boards of directors of
 RKO and General Tire.

power auxiliary broadcast renewal.
 When completing Item 6, do not
 specify the manufacturer, type
 number and maximum rated power
 output, but only specify "type-
 accepted equipment is proposed".

Plugola Proceeding

The FCC has determined not to
 issue formal rules regarding plugola,
 but instead to deal with this on a case-
 by-case basis. The FCC felt that a rule
 would be too complex to draft and it
 might leave loop-holes.

Remote Pickup Applications

The Commission has modified its
 procedures for completing Item 6 of
 FCC Form 313, which is the
 application for remote pickup or low

License Denial

what appears to be one of the
 strict sanctions levied by a
 nment agency, the FCC denied
 licenses of WNAC-TV, Boston,
 TV, New York, and KHJ-TV,
 angeles, which were all licensed
 O General, Inc., on the basis
 ne misconduct by RKO and its
 corporation, General Tire,
 extensive and serious that the
 e could not be trusted to

Show
 from page 10

manufacturer or the distributor who
 to serve the highly specialized
 ous market. Once the
 ation is uniform, every part of
 angelical media can interface.
 Billy Graham or Rex Humbard
 res financial reward as a
 quence of doing the Lord's
 ("God is not against success"),
 ight the properly motivated
 acturer or distributor reap the
 ts of right action. The
 oment manufacturer or
 utor who complains that the
 ous broadcasting industry
 imes confuses business with
 y might do well to consider
 z them rather than fighting
 That way, at least, he could be
 ng some of his blessings all the
 o the bank.

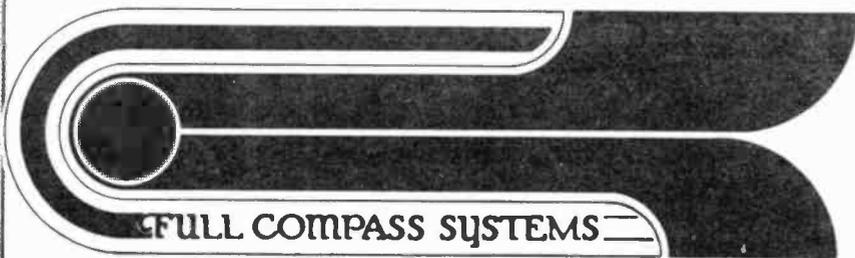
Amps
 from page 5

ks. In many cases, of course,
 engineers compensate for the
 y turning up the input level
 ols on whatever equipment
 s. Doing this, however, will
 de the signal/noise ratio. Now
 distribution amplifiers are
 y available at reasonable prices,
 use remains for not using them
 e more way to maintain the
 y audio that listeners are
 stng more and more.

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
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<p> UNITED TAPES of AMERICA</p> <p>Check our Prices on:</p> <ul style="list-style-type: none"> Agfa AKG Autogram Inovonics Otari Revox Shure Telex UREI Ursa Major <p>Box 1193, Grand Junction, CO. Call Collect: 303-242-0405</p> <p>Circle 122</p>	<p>Serving Over 3000 Stations in 26 States</p> <p>ELECTRONIC INDUSTRIES INC.</p> <p>distributors of electronic equipment and supplies</p> <p>"Call Spokeshaven Person to Person—Collect"</p> <p>19 East Irving Avenue Oshkosh, WI 54901 (414) 235-8930</p> <p>Circle 120</p>	<p>T&S Electronics</p> <p>Professional Equipment Sales</p> <ul style="list-style-type: none"> Aiwa AKG Anvil Eddcor ElectroVoice Mike snakes PML Sony Tapco TDK UREI Vega <p>PO Box 1846 Grass Valley CA 95945 916-272-3809</p> <p>Circle 139</p>	<p>SURCOM ASSOCIATES</p> <ul style="list-style-type: none"> CORNELL-DUBILIER MICA CAPACITORS ITT JENNINGS VACUUM CAPACITORS C.S.P. COILS & ACCESSORIES <p>- MANY VALUES IN STOCK -</p> <p>305 Wisconsin Ave. Oceanside, CA 92054 714-722-6162</p> <p>Circle 144</p>



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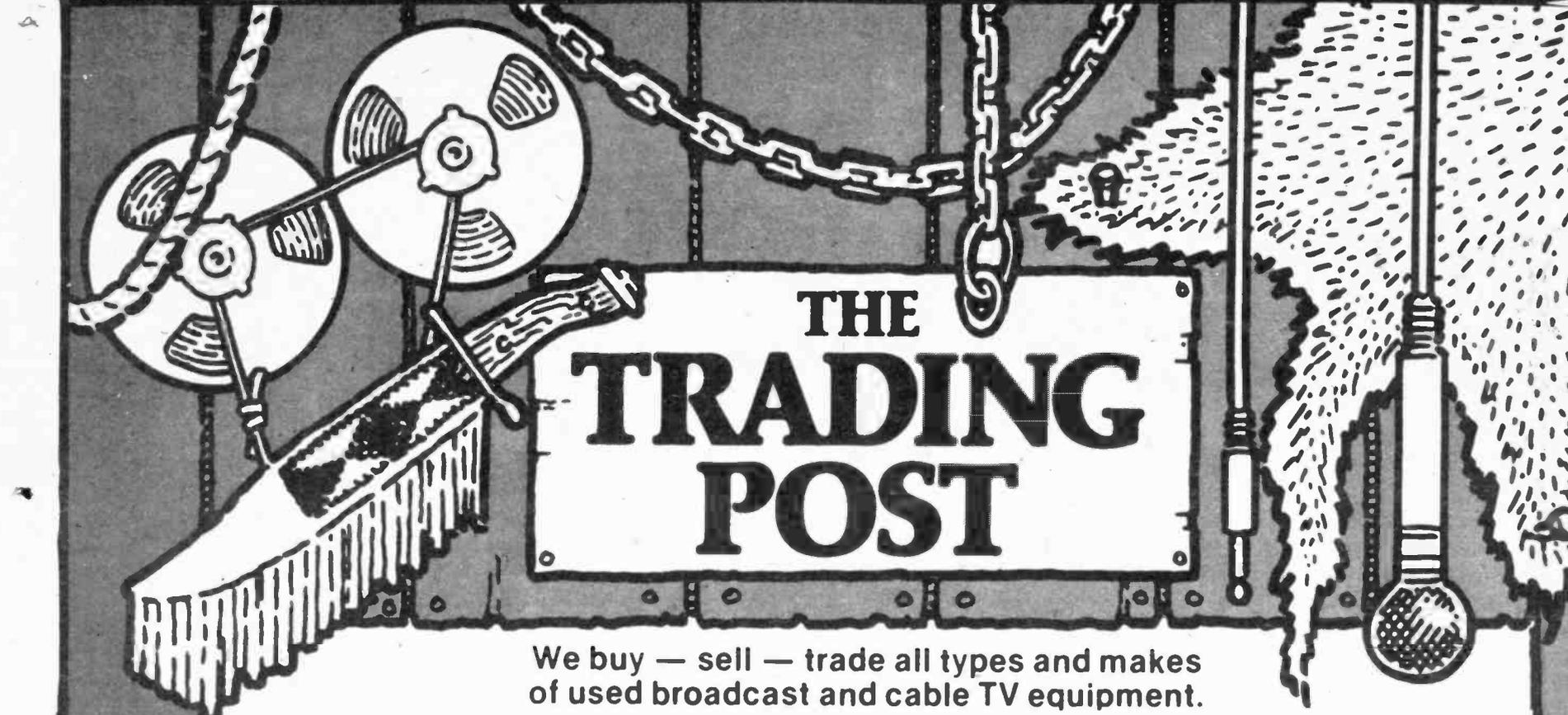
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