Drake Chenault

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The Programming and Marketing Strategy Team

ALBUQUERQUE LOS ANGELES

OPERATIONS MANUAL

FOR

STEREO ROCK

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GETTING ON TARGET

It's very important to know where you want to go before you decide how to get there. Too many times, people set out to build a radio station without a clear idea of exactly what they seek to accomplish. This leads to mis-direction and wasted effort.

The most successful radio stations are the ones with a clear, practical idea of a specific target audience they want to reach. This leads to effective programming and a strong sales effort. When the goal is clear, day-to-day decisions become much easier...staff members have a sense of direction and the audience can better understand what a station has to offer. Most stations have a general idea of what target audience they want to reach, but the most successful stations generally take the time to refine and develop the idea.

In this section of the Operations Manual, you'll find ideas about defining your target audience and reaching your target audience.

DEFINING YOUR TARGET AUDIENCE

The day has long passed when a radio station could be "all things to all people". Modern marketing has come to our broadcast medium. Radio, like other mass communications, needs to direct itself toward a particular segment of the public...a target audience. This target audience must be large enough to be economically profitable, but can't be so large as to be impossible to satisfy with one type of sound.

Defining your target audience starts with total radio audience. It's not enough to say that a station's target is "the people who like our music". You need a more precise definition, one that includes the "demographics" and "psychographics" you wish to reach.

"Demographics" refer to the specific age and sex you seek to reach. Are you trying for a young audience or an old one? More specifically, are you trying to reach teens and young adult or listeners 35 years of age and older?

"Psychographics" refer to the psychological outlook of you target audience; more simply, their "life-style". Is your target "conservative" in life-style or "hip"? What are the general interests of your target? Family life? Sports? Rock concerts? The opposite sex?

In evaluating what segment of the public will be your target audience, you need to take into account both programming and sales opportunities. What large audience is not being well served in your market? What large audience do advertisers wish to reach? What kinds of opportunities already exist for advertisers to reach that audience? Whenever possible, try to find a large unserved audience.

In defining your target audience, consider both "demographics" and "psychographics". Avoid two pitfalls: making it too narrow or making it too wide.

Some stations seem to be trying to reach "35-40 year old women who own two cars and like soft music, but also like a bit of contemporary and then some country"...Obviously, a too narrow and specialized target audience. On the other hand, trying to reach a wide audience 12-50 can be too ambitious to accomplish with one radio station.

The width of your target often depends on how many stations in your market serve the target audience. The more stations, the more specific and distinctive each one has to be. On the other hand, if you're the only station serving a particular type of audience, you can define your programming in wider terms.

All Drake-Chenault formats are designed for the widest possible audience. But through music mix flexibility, they can target in on your specific needs.

REACHING YOUR TARGET AUDIENCE

Once you have a clear idea of who you are trying to reach, it's a lot easier to decide how to reach them. First of all, your music should be directed at the tastes of that target audience. In the FORMAT section of the manual, you'll find a complete explanation of the philosophy and structure of your Drake-Chenault format.

Secondly, your on the air announcers should sound professional and compatible with your music image. Here are some other thoughts about what your announcers should be:

1. Very much an active part of the community they live in. They should know what's happening at all times in their market and be able to communicate to their listeners.
2. Enthusiastic about everything involving the station format and present it as such, without sounding "hyped" and "phony".
3. Fun. Not one-liner funny. Fun characters - fun personalities. Many people are funny because of their character, and not because of their content. The same is true of the best announcers.

4. Understand their role in making a radio station a winner. Knowing exactly what their responsibilities are and doing them well, with enthusiasm, both on and off the air.

To also help you reach your target audience, your news, PSA's, etc. should be meaningful to them. You'll find specific information in the COMMUNITY INVOLVEMENT section of this manual about relating your service elements to your target audience.

STEREO ROCK

In this section of the Operations Manaul you'll find specific information about **STEREO ROCK.** Detailed instructions for handling current, recurrent and library reels are also in this section and must be read very carefully.

After you've read the material about **STEREO ROCK**, please review any questions with your Drake-Chenault National Programming Consultant.

Beginning on the next page, we'll review the "3 C's": CONSISTENCY, COHESION and CONCERN.

THE 3 C's

The principal values that apply to all elements of a radio station, i.e., music, promotion, community involvement, etc., that must be present for your station to reach its desired goals are CONSISTENCY, COHESION and CONCERN... "The 3 C's".

CONSISTENCY is the uniformity of your station's overall sound. Your reliable listeners must hear what they expect to hear when they tune in. They have an image of your station and it must be consistent. Otherwise, your reliable listeners will be confused and could become casual listeners and possibly not listen at all after a period of time.

Every station's audience is made up of a percentage of casual listeners. They are important and help build cumes. Casual listeners must also hear what they expect to hear if they are to continue sampling your station and potentially become reliable listeners.

Basic format elements like promotion, news and weather should reflect a consistent image which serves the audience you want to listen. Consistency is the foundation on which your entire station's audience will be built and maintained.

Consistency should not be confused with repetition. Every station has listeners who listen for extremely long periods of time. They could be station staff members or employees of a business which uses your station for "background music". Someone who listens for six, eight and more hours a day is not considered an "average listener" and may feel your station is repetitious.

The amount of time an "average listener" listens will vary depending on the competitive structure in your market and the type of format. Generally, the average listener spends about an hour a day with any single station.

Drake-Chenault formats are designed and programmed for "average listeners".

COHESION, the second "C", refers to your sound "sticking together" and making sense to your audience. Your listeners should not perceive any difference between the program material that we send you and everything else that happens on the station.

Promotion, news, PSA's, etc., should be cohesive and come together as one compatible sound which is consistent with the goals of your format. All commercial production should be of highest quality and also complement your format.

CONCERN is the third "C". A genuine concern for the listener you want to serve will do much to create the personality and image of your station. It's important that careful consideration be given to the content of all program elements. This attention to detail will tell your audience that your station is operated by professionals who care about them.

Be concerned about your listeners' music tastes, money problems, personal safety, desire to be informed...everything that touches them everyday.

Since radio is the most immediate, intimate and mobile mass medium, it can be used anywhere and anytime. Keep that in mind and consider it before anything goes on the air. It's a great check and balance for building a solid image and successful station.

MUSIC CATEGORIES

STEREO ROCK is a mass appeal contemporary hit format that has strong appeal to the 12-34 year old listener/consumer. The core audience is the 18-34 adult.

The music in the format is familiar and mass appeal. **STEREO ROCK** has five categories of music. They are:

(1) 100 Series Power Currents: The songs in this category are the top 11 CHR hits of the week. Power currents are updated weekly and are repeated twice on the reel (22 cuts). The Power Current reel plays on deck #1.

(2) 200 Series Secondary Currents: The songs in this category are the up and coming titles on the CHR charts. Secondary currents are updated weekly with the two most recent reels in rotation and contain approximately 19 cuts per reel. The Secondary Current reels play on deck #2.

When new songs are considered for play on Stereo Rock, they are evaluated on: (a) the compatability of the song with the format; (b) the strength of the song and (c) the appeal of the artist.

The secendary current reels are available either announced or unannounced.

You should always rotate the two most recent secondary current reels. You rotate only one Power current reel per week. Some songs will appear on both of the secondary current reels and some on only one of the reels rotating. This allows three types of rotation for current music. The Power currents are your most heavily rotated songs followed by secondary and tertiary rotations of music in the secondary current reels. The exact turnover time will vary according to your commercial load and music mix. However, the turnover time for a Power current reel should be approximately 3 1/4 - 3 3/4 hours. Secondary currents turnover time are approximately 4 3/4 - 5 3/4 hours. A detailed outline of correct current reel handling can be found in the reel handling part of this section. Please read it carefully before going on the air.

(3) Recurrent: The music on this reel consists of songs that were the biggest recent current hits. The recurrent is used on deck #3. The recurrent reel is unannounced because of the familiarity of the music.

(4) 400 Series Oldies: The songs in this category are the stongest CHR core oldies. You'll find Huey Lewis and the News, Phil Collins, Bon Jovi, Bruce Springsteen, and other 18-34 oriented artists in the 400 series. These Oldies are designed to run on deck #4. There are 24 reels of 15 cuts in this category. Stations using the 400 Series are referred to as "Stereo Rock I" clients.

(5) 500 Series Oldies: This category is made up of the strongest possible mass appeal oldies artists like Bob Seger, Phil Collins, Fleetwood Mac, and The Rolling Stones. The 500 Series should be run on deck #4. The 500 Series consists of 29 reels, each having 21 titles. If you station uses the 500 Series, your format is known at "Stereo Rock II".

(5) 600 Series Classic Rock: This is an optional oldies series for use as a flavor category. Songs by The Rolling Stones, Beatles, Creedence Clearwater Revival, Eagles and others are in the 600 Series. There are 24 reels of 18 songs each in this category. Because of the familiarity of all music, the category is not announced. The 600 series should be played either on a 5th deck or from cartridges.

*Note: The 400 and 500 categories are not designed to be used together. Approximately 60% of the titles are duplicated.

Hot Tracks: Another optional category to add "spice" to the format. The top tracks from the current AOR charts are featured on the reels. The two most recent reels are rotated with an update received every other week. There are 13 cuts on each reel.

REEL HANDLING

THE NEXT FEW PAGES WILL GREATLY AFFECT YOUR LISTENERS' RESPONSE TO YOUR STATION AND THE STATION'S ULTIMATE LEVEL OF SUCCESS. PLEASE READ THIS SECTION ON REEL HANDLING VERY CAREFULLY AND REVIEW ANY QUESTIONS WITH YOUR DRAKE-CHENAULT NATIONAL PROGRAMMING CONSULTANT.

The line between consistency and repetition can be a fine line. To insure that your station is consistent but not repetitious, certain procedures regarding reel handling must be understood and followed.

Current Reel Handling: The Power and Secondary current reel will be labeled with a "1" or "2", (because it goes on deck #1 or #2), followed by the numeric week of the year. The first current reel of the new year would be labeled 1/1 and 2/1. The last current reel of a year would be labeled 1/52 and 2/52.

When airing **STEREO ROCK**, you should always have the three most recent current reels in rotation. For example, if you had 1/1 and 2/1 and 2/2, you would play 1/1 and 2/1 to the end, then use 1/1 and 2/2. When 1/1 and 2/2 is completed, go back to 1/1 and 2/1, etc. .pa

Recurrent Reel Handling: The recurrent reel will be labeled with a "3" (because it goes on deck #3), followed by a number that corresponds to the number of recurrent reels produced that year. Since the recurrent reel is produced every two weeks, the last recurrent reel of a year would be labeled 3/26.

When airing **STEREO ROCK**, you should always have the most recent recurrent reels in rotation. For example, if you had 3/1 and 3/2, you would play 3/1 to the end, then use 3/2. When 3/2 is completed, go back to 3/1, etc. When you receive 3/3, you would play 3/2, 3/3, 3/2, etc., until you receive 3/4. Then rotation would be 3/3, 3/4, 3/3, 3/4, etc.

On Page SR15 of this manual is a sample card that we suggest you use for each current and recurrent in rotation to help you track reel change times. It must be completed as reels are changed and reviewed daily by the program director. Do not change the current and recurrent reels at the same time every day or you will have horizontal repetition. If you find that the current or the recurrent are being changed at the same time, you should "cue ahead" a minimum of six songs sometime overnight, i.e., 4:00AM.

If you do not thoroughly understand the procedure for rotating current and recurrent reels or think that you might have a repetition problem, please call your National Programming Consultant immediately.

Library Reel Handling: Specific instructions for using your **STEREO ROCK** library reels begin on the next page. Please read them carefully.

VERTICAL AND HORIZONTAL ROTATION

Vertical rotation is the length of time it takes to play or turnover a category of music. Turnover time will vary slightly because of a differing commercial load and music mix from daypart to daypart. However, for **STEREO ROCK**, the current reel should turnover approximately every 3 3/4 - 4 3/4 hours. The recurrent reel should turn over every 9-10 hours. If your turnover times are significantly different than above, call your National Programming Consultant immediately.

Horizontal rotation is the control of music to prevent the same song from playing at the same time day after day. Poor horizontal rotation can cause listener complaints about repetition. The complaints occur not because of how many times you are playing songs, but how many times your listeners are hearing the songs. The "average listener" tends to listen at the same times every day.

REEL ROTATION CHECKLIST

(PLEASE READ THE FOLLOWING VERY CAREFULLY)

The system for using your **STEREO ROCK** library reels is simple. However, there are important checks in the system that must be made daily to insure that excessive repetition of music does not develop.

BEFORE YOU BEGIN USING **STEREO ROCK:**

(1) Create a 5x8 file card for all library reels. Each card should contain the following information, (1) REEL NUMBER, (2) DAY, (3) TIME LOADED. (See sample card on page SR15).

(2) When you begin using the card file system, arrange the cards in each category sequentially, i.e., 401, 402, 403, 404, etc. Each time a reel is loaded, the day and time should be entered on the card and placed at the back of the file for that category.

(3) After playing all the songs on a library reel, rewind the reel and look at the card at the front of that category. If the card shows that the reel has not played within <u>two</u> hours of the present time within the last week, load the reel. If it has played within two hours in the last week, take the next card to see if that reel meets the criteria. If it does, load it. You should leave the skipped card at the front of the category. It will be considered first the next time a reel change occurs.

For example, it's 4:00 Thursday afternoon and reel #401 has finished playing. The next card is for reel #403. It was loaded at 2:30PM on Monday. This reel should not be used. The next card is for reel #406, which was last loaded Monday at 1:00AM. Load it. The card for reel #403 will be at the front of the card file and will be considered first when reel #406 is finished playing.

The same procedure should be repeated three cards deep. If none of the three cards meet the criteria, use the reel that has not been used for the longest time. This system will constantly shuffle the order in which you play the library reels. It prevents horizontal repetition and exposes your total oldie library to your audience.

The card file system should be reviewed weekly by the program director to insure that the system is being followed and is working.

If you have any questions or are unsure about use of the card file system, talk to your National Programming Consultant.

You will notice that some reels have a letter designation after the number, i.e., 401A, 402B, etc. We use the letter designation to indicate an updated reel. For example, reel #401A would replace reel #401. In your library, you should have only one reel with each number in use.

If you are using the optional "600 Series" of reels, call your National Programming Consultant for instructions on their correct handling.

SAMPLE REEL CARD

REEL # _____

DAY	TIME LOADED	DAY	TIME LOADED	DAY	TIME LOADED	DAY	TIME LOADED	DAY	TIME LOADED

EXAMPLE:

REEL # 107A

DAY	TIME LOADED	DAY	TIME LOADED	DAY	TIME LOADED	DAY	TIME LOADED	DAY	TIME LOADED
MON	1:30A	WED	8P.M.	FRI	11:30A				
Th	11AM	Sat	2AM.						
Sun	4P.M.	Tues.	7AM.						

AIR CHECK ANALYSIS

Air check critiquing is one of the services we provide to help you get the most benefit from your format. Air checks are valuable programming tools to help us detect potential problems on your radio station.

It is best to tape the station during a typical hour with a normal commercial load. Please include a newscast. The announcer/operator should not be aware that an air check is being made. It is important that the tape be an accurate representation of the station; otherwise, the critique will be of little value to anybody.

Specifically, here is what an aircheck should contain.

1. The air check should be one hour in length.

2. The tape should begin just before the top of the hour station ID.

3. The tape should be unedited. Do not edit out the music.

4. Cassettes are greatly preferred.

5. Please indicate which reel numbers were being played at the time of the air check.

6. Each air check should be of one announcer or daypart. Do not send a composite of all announcers and dayparts. They can be critiqued individually in future air checks.

After listening to your air checks, you will receive a written evaluation from your National Programming Consultant.

STATION ID'S AND PROMOS

Our announcers are available to record station I.D.'s and promos. So that the "liners" we use have relevance to your market, we prefer that you submit "copy" for the ID's and promos. Please allow three weeks for delivery.

After carting the ID's, promos, jingles, etc., that you receive from us, be sure and store your master tapes in a safe place.

Also, you should regularly re-dub the material to cartridge to insure good sound quality.

AUTOMATION

Successful radio stations provide a balance mixture of entertainment and information to relate to their audience. Whether or not those elements are actually executed "live" or "automated" doesn't matter to your listeners as long as the elements are there. The listener relates to radio rather than the mechanics of getting it on the air.

In this section, you'll find: (1) Equipment requirements; (2) Specifications for Drake-Chenault program materials; (3) Suggestions for MAKING YOUR AUTOMATION SOUND "ALIVE".

EQUIPMENT REQUIREMENTS

Drake-Chenault formats are designed to be run on standard automation equipment. The minimum equipment required is:

1. Four reel-to-reel playback decks with cue tone detectors and stop delay units capable of playing 10 1/2 inch reels of 1/4 inch tape at 7 1/2 i.p.s., standard two-track stereo configuration with standard N.A.B. equalizations.

2. Single play cartridge playback units for I.D.'s, weather, and P.S.A.'s.

3. Two multiple spot playback units for commercial matter, capable of playing at least two 30 second spots back to back without interruption.

4. A program control unit (automation brain) with a time clock which can re-set every 30 minutes.

The following equipment is desirable, but not required:

1. A silence-sense device. This provides that should audio from one source fail, the next event will start. A silence-sense device should sample both channels.

2. A fifth reel-to-reel machine. This can be used for production, but should be wired in such a way as to be able to be used as a spare, should one of the four automation decks fail.

3. A third multiple spot playback unit for ease of triple spotting.

4. Time announce equipment.

5. End-of-reel alarms on ALL four tape decks. The alarm should be loud enough to be heard in all operating areas.

6. An oscilloscope for use in aligning the tape decks and for monitoring the on-air signal.

If you are contemplating the purchase of new equipment for use with our formats, we suggest you speak with us first. We can answer your questions as to exactly what is required and how it would apply to your particular station.

GETTING YOUR AUTOMATION READY

Set up your equipment as specified by the manufacturer. This means that all elements should be functioning properly and according to specifications. The automation brain and associated equipment must work as needed for flawless operation. All tape decks should be operating on the correct tension settings (important for even starting of reels). Cartridge machines, both single and multiple play, should be checked out thoroughly.

Azimuth Adjustments: Correct head azimuth adjustment is critical for both stereo and mono listeners. Good mono compatibility can only be achieved through the correct azimuth adjustment of all tape decks. This adjustment must be checked frequently...at least once per week. Azimuth can be most accurately adjusted by using an oscilloscope in conjunction with the special alignment tape that we provide.

You should check your oscilloscope for phase shift by connecting the output of your audio generator to both the horizontal and vertical scope inputs. The scope pattern should be almost a straight line at all audio frequencies. If the pattern is an oval, your scope has significant phase shift and cannot be used for this procedure.

We take great care to make sure that the tapes we send you are of highest quality and have the absolute minimum variation in azimuth from head to tail and from tape to tape. To achieve these standards, we have had a large quantity of special alignment tapes produced exclusively for our use. We use these in our mastering studios and in duplication.

With your first shipment of library tapes, you will receive one of these special tapes. Detailed instructions will be provided with the tape.

As a regular check on mono compatibility, we suggest that you constantly monitor your station in mono. In this way, phasing problems become immediately evident.

Correct azimuth adjustment is critical to the success of any station. Time spent on the critical adjustment of your equipment is time well spent.

TAPE DECK STOP/DELAY UNITS

Tape deck stop/delay units must be correctly set for a smooth flow of events on the air. Since each automation unit and various tape decks differ in their performance, we'll indicate general specifications. The fine tuning should be done with your programming people.

As mentioned earlier, all switching tones are 25 Hertz at 7 db below standard N.A.B. operating level. They are mixed with the program material on the left (upper) track of stereo tapes. The length of the switching tone varies according to the programming material and overlap. The tones generally are one to three seconds in length. It may be necessary to adjust the 25 Hertz sensitivity of your machine for proper operation.

The start of the 25 Hertz switching tone must activate the next event. The end of the switching tone must cut audio on the event and cause the deck to stop two seconds later. While the switching tone is on, the audio must not be cut off.

Drake-Chenault formats standardize cue tone placement one second before the next event should start. This also means that each event must begin with one second of silence before audio.

The one second dead roll on all events ensures that all decks are up to speed as audio begins.

Each tape deck must have a stop/delay unit. This unit will stop the tape deck a pre-set period of time after the end of the 25 Hertz cue tone. The delay between the end of the tone and the stop of the deck should be adjustable.

Drake-Chenault tapes are made with 3 seconds between the end of the cue tone on one selection and the beginning of audio on the next. This means that, for general adjustment, the delays on the decks should be set to run for two seconds after the end of the cue tone. This would mean that there would be 7 1/2 inches of tape (or 1 second) between the point at which the tape stops and the beginning of the next audio on the tape.

Along with your first shipment of tapes, you will receive a stop/delay set-up test tape. The first part of this tape contains track identification announcements on the appropriate track. The second part of the tape is an aid to adjusting the stop delay on your tape decks. This part of the tape has a 25 Hertz tone at 7 db below N.A.B. standard operating level and then 2 seconds of leader tape. Load this tape on your decks and set the delay units so that the decks stop at the end of the leader. This will give you a general setting for the delays.

After your tape decks are set up for the one second dead roll as outlined, load four tapes on the correct decks and have the automation machine sequenced to play them in a row (you can set up: deck #1, deck #2, deck #3, deck #4, and deck #1, deck #2, etc.). Run the machine with the reels and note the tightness of the segues from reel to reel. There should be a smooth flow with no dead air. Run through the sequence several times, noting any segues that don't sound right. Lengthen or shorten the dead roll on particular decks until all segues are sounding good.

DRAKE-CHENAULT TAPE

All the tapes you receive from us are recorded at 7 1/2 i.p.s., N.A.B. standard azimuth, level and equalization. Our alignment standard is defined by a special alignment tape we will send you with your automation decks.

All tape is 1 mil., approximately 3600 ft., on 10 1/2 inch reels, N.A.B. standard hub.

All cue tones are 25 Hertz at -7db. On stereo tapes, the cue tones are mixed with the left channel (upper track) program material.

You will receive a special test tape with your library. This tape is used to set up the stop delay timing on your decks and to identify the upper and lower channels on all tape transports.

The test tapes should be handled carefully and stored in a safe place.

SPECIFICATIONS FOR DRAKE-CHENAULT REELS

Recorded level: O VU, +/-2db. (OVU=2000 nWb/M).

Frequency response: 25 to 10 kHz, +/- 3db.

Phase error: 90 degrees or less, to 10 kHz.

Speed: 7 1/2 i.p.s., +/- 2db.

Cue tone level: 7db, +/- 2db.

Cue tone frequency: 25 Hz, +/- 1%.

Track format: NAB standard two track stereo or mono.

Distortion: (Function of residual tape distortion.)

Noise: (Function of residual tape noise.)

Notes: Drake-Chenault tapes are direct dubs from studio masters. No intermediate "dubbing master" is ever used. Station dubs are generated on a real-time duplicating system, operating at 15 i.p.s.. Every slave recorder's recording head is aligned for minimum phase error to each individual pancake of tape, each time the slave is loaded. New tape stock is always used; we never re-use returned tapes. 25 Hz cue tones are injected onto station copies during the duplication process by a low-distortion generator. Cue tones are never dubbed from master to copy.

CARTRIDGES

All cartridge machines used for both record and playback should be aligned to the same standard. They should be maintained in excellent operating condition and cleaned often. The cartridges themselves should be inspected for wear and replaced when necessary.

All cartridges used on the automation system must be carefully recorded. Because all cue tones on the music tapes are one second early, all cartridges must be recorded with one second dead roll preceding audio. Similarly, the cue tones at the end of the recorded material on all cartridges must appear one second before the actual end of audio. Audio should stay on the air during this tone.

If your station is to flow smoothly on the air, dead roll and cue tone placement on cartridges is critical. The following method will insure accurate dead roll and tone placement.

1). Mark a reference point permanently on the reel-to-reel machine used to dub the cartridge. This point should be exactly 7 1/2 inches before the playback head (that is between the head and the feed reel). An easy way to mark this is to measure off 7 1/2 inches on a piece of leader, thread it on the machine, in the same way your tape threads, and mark the distance from the center of the playback head.

2. Cue up the audio to be dubbed. Using a grease pencil, mark the tape at the very beginning of audio. That is, cue to the start of audio then put a mark on the tape right where the center of the playback head is. This mark will be used for getting the one second dead roll at the beginning of the cart you're going to record.

3. Now go to the end of the audio you're carting. What you need to do is put another mark on the tape, this time at the point where the next audio should start when the cart is played on the air. The best way to do this is to play the end of the spot and stop the machine at the moment when you feel the next audio event should begin. Once you've stopped the machine, just put a mark on the tape at the point where the center of the playback head is.

4. You should now have your tape marked in two places. Go back to the mark at the beginning of audio and cue this up at the mark you've made on your tape machine (the one 7 1/2 inches before the playback head). When you start your tape machine, you'll have one second before the audio begins.

5. With the tapes cued up as described, start your tape machine and the cart recorder simultaneously. You may want to wire both machines so that one button starts them together.

6. The next thing you need to do is to place the cue tone properly at the end of the audio. The cue tone needs to be placed one second before the next audio event should play. Start the cue tone when your second mark on the tape (the one at the end of the audio) reaches the mark you have made on your tape machine.

Theoretically, a mark 7 1/2 inches before the playback head should give you the exact interval of time you need. But we have found that equipment varies from station to station. Some tape decks start quicker than others, the same for cart machines; different automation machines have differing reaction times. Start with one second (7 1/2 inches on your tape machine) first, and then practice until your station sounds tight. The important thing here is to find the correct time delays and then to standardize them with repeatable procedures.

Each cartridge you record should be double checked for dead roll and tone placement accuracy prior to use on the air.

THE DRY RUN

Prior to going on the air, load music reels, I.D.'s, jingles, commercials, etc., into the system as a final check. Sequence the elements as laid out by your National Programming Consultant.

First run the format for several hours to re-check dead roll, and stop/delays. Make any necessary adjustments and correct obvious problems.

Now you're ready for an extended test. We suggest that you run the format 24 hours a day for at least three days before going on the air. This will help you make a better first impression with your new sound.

Be sure that all personnel are thoroughly briefed on new procedures. Those responsible for tape changes must understand the procedures, as outlined in the FORMAT section of this manual. The announcing staff must understand and practice how to sound "alive" as described in the AUTOMATION section.

PROBLEMS/SOLUTIONS

PROBLEM	SOLUTION
Tapes not running smoothly; too much space between tapes	Tape machine delays not adjusted properly; re-adjust the second of the machines in the loose segue for less dead roll before audio
Tapes running with too much overlap	Tape machine delays not adjusted properly; re-adjust the second of the machines in the tight segue for more dead roll before audio
Tapes sound muddy or too bright	Re-check the alignment of your tape machines with our test tape
Cartridge-to-cartridge segues too loose or too tight	Re-check dead roll and cue tone placement on cartridges
Tape-to-cartridge segues too loose or too tight	Re-check dead roll length on the cartridge
Cartridges sound muddy or too bright	Re-check both record and playback alignment on all machines; clean machines

MAKING YOUR AUTOMATION SOUND "ALIVE"

Many broadcasters used automation in its beginning, to replace people and cut costs. Automation was usually used by FM stations and, because of the lack of competition, a certain amount of rating success was gained.

Today, with radio everywhere becoming more competitive, maximizing "walk-away time" will usually not make a station a leader in its market. However, through the effective utilization of people, automation can offer reduced operating expenses. The primary advantages of automation are: control and consistency of sound.

A combination of control and consistency of sound coupled with the knowledge of how to make your automation sound "alive" will enable you to be competitive with "live" stations in your market. Here's what you need to get it done:

1. A staff of announcers that understand and believe in the concept of automation. You won't need a staff a large as a "live" station's, but you will need people whose announcing skills are competitive for your market and enjoy working in other areas. This is important because after they have recorded input, i.e., weather, PSA's, commercials, etc., for insertion into the automation, they would be expected to work in other areas, such as, promotion, sales, traffic, etc. Your Drake-Chenault National Programming Consultant can help you determine what size staff you need.

2. Automation equipment which has good flexibility. Flexible does not mean expensive, but rather a system that has potential to evolve and grow with your station. Digital memory, at least three single plays, and a random select cartridge source are desirable in addition to your music sources.

The amount of format input done by our announcers can vary. Drake-Chenault will produce I.D.'s, promos, sell lines, etc. using our announcer, and most of our formats are available announced. However, our formats are also available unannounced, which gives your announcers the opportunity to take a higher profile and presence on the air. Local elements, i.e., weather, PSA's, etc., that should be very immediate, as outlined in the community involvement section of this manual, can then relate directly to music and sound very natural and "alive" to your listeners.

The term "relating to music" included referring to songs which have just played or "billboarding" upcoming artists or songs. This can easily be done since you have control of the frequency of play of each music source. It just requires planning ahead.

Other "alivening" techniques in addition to relating to music include:

(1) The personalizing of the station by having your announcers give their names,

(2) referring to the approximate time of the day. i.e., "It's a few minutes after 10 o'clock..." or "We're in the 2 o'clock hour of music...",

(3) promoting other program elements which will air in the near future, i.e., "Later this hour we'll be giving away the new album by..."

For all program elements recorded by your announcers, it's imperative that they develop a recording style that sounds "live". There is an art to recording weather forecasts, PSA's, music back-sells, etc., so that they sound "live". While recording, your announcers should relax and imagine they're "on the air". Then, as you listen, evaluate the "feel" and the pacing. Do they sound natural? Your audience expects a warm, honest friendliness from a radio station.

When listeners criticize a station for sounding "automated", they're usually referring to a cold, impersonal announcing style, rather than the fact that the station happens to be using an automation system.

Your Drake-Chenault Program Consultant can help you develop an "alive" sound. It's well worth the commitment to add the dimension of "aliveness" because when correctly executed your listeners will appreciate the added degree of involvement.

LIVE ASSIST

Successful radio stations provide a balanced mixture of entertainment and information and relate to their audience. It doesn't matter to your audience if the music you play comes from disc or tape. The listener relates to radio rather than the mechanics of getting it on the air.

In this section, you'll find: (1) Equipment requirements; (2) Specifications for Drake-Chenault program materials; and (3) Suggestions for MAKING THE MOST FROM LIVE ASSIST.

EQUIPMENT REQUIREMENTS

Drake-Chenault formats are designed to be run on standard broadcast equipment. The minimum equipment required is:

1. Four reel-to-reel playback decks with cue tone directors and stop/delay units capable of playing 10 1/2 inch reels of 1/4 inch tape at 7 1/2 i.p.s., standard two track stereo configuration with standard NAB equalizations.
2. A "ready light" which lights when the 25Hz tone is detected.
3. Single play cartridge playback units for commercials and other produced elements.

The following equipment is desirable, but not required:

1. A "mini-brain" capable of automatically sequencing two or three music decks.
2. A digital timer that automatically resets and starts when a new music deck begins.
3. A fifth reel-to-reel machine. This can be used for productions, but should be wired in such a way as to be able to be used as a spare, should one of the four decks fail.
4. An oscilloscope for use in aligning the tape decks and for monitoring the on-air signal.

If you are contemplating the purchase of new equipment for use with our formats, we suggest you speak with us first. We can answer your questions as to exactly what is required and how it would apply to your particular situation.

GETTING YOUR EQUIPMENT READY

Set up your equipment as specified by the manufacturer. This means that all elements should be functioning properly and according to specifications. All tape decks should be operating on the correct tension settings (important for even starting of the reels). Cartridge machines, both single and multiple play, should be checked out thoroughly.

Azimuth Adjustments: Correct head azimuth adjustment is critical for both stereo and mono listeners. Good mono compatibility can only be achieved through the correct azimuth adjustment of all tape decks. This adjustment must be checked frequently ... at least once per week. Azimuth can be most accurately adjusted by using an oscilloscope in conjunction with the special alignment tape that we provide.

You should check your oscilloscope for phase shift by connecting the output of your audio generator to both the horizontal and vertical scope inputs. The scope pattern should be almost a straight line at all audio frequencies. If the pattern is an oval, your scope has significant phase shift and cannot be used for this procedure.

We take great care to make sure that the tapes we send you are of the highest quality and have the absolute minimum variation in azimuth from head to tail and from tape to tape. To achieve these standards, we have had a large quantity of special alignment tapes produced exclusively for our use. We use these in our mastering studios and in duplication.

With your first shipment of library tapes, you will receive one of these special tapes. Detailed instructions will be provided with the tape.

As a regular check on mono compatibility, we suggest that you constantly monitor your station in mono. In this way, phasing problem become immediately evident.

Correct azimuth adjustment is crucial to the success of any station. Time spent on the critical adjustment of your equipment is time well spent.

TAPE DECK STOP/DELAY UNITS

Tape deck stop/delay units must be correctly set for a smooth flow of events on the air. Since various tape decks differ in their performance, we'll indicate general specifications. The fine tuning should be done with your programming people.

As mentioned earlier, all switching tones are 25 Hertz at 7 db below standard NAB operating level. They are mixed with the program material on the left (upper) track of stereo tapes. The length of switching tone varies according to programming material and overlap. The tones generally are one to three seconds in length. It may be necessary to adjust the 25 Hertz sensitivity of your machine for proper operation.

The start of the 25 Hertz switching tone should activate a "ready light". The end of the switching tone must cut audio on the event and cause the deck to stop two seconds later. While the switching tone is on, the audio must not be cut off.

Each tape deck must have a stop/delay unit. This unit will stop the deck a pre-set period of time after the end of the 25 Hertz cue tone. The delay between the end of the tone and the stop of the deck should be adjustable.

Drake-Chenault tapes are made with 3 seconds between the end of the cue tone on one selection and the beginning of audio on the next. This means that, for general adjustment, the delays on the decks should be set to run for two seconds after the end of the cue tone. This would mean that there would be 7 1/2 inches of tape (or 1 second) between the point at which the tape stops and the beginning of the next audio on the tape. The one second dead roll ensures that all decks are up to speed as audio begins.

Along with your first shipment of tapes, you will receive a stop/delay set-up test tape. The first part of this tape contains track identification announcements on the appropriate track. The second part of the tape is an aid to adjusting the stop delay on your tape decks. This part of the tape has a 25 Hertz tone at 7 db below NAB standard operating level and then 2 seconds of leader tape. Load this tape on your decks and set the delay units so that the decks stop at the end of the leader. This will give you a general setting for the delays.

If you are using a "mini-brain" capable of sequencing decks, set up for the one second dead roll as outlined, load four tapes on the correct decks and have the brain sequenced to play them in a row (you can set up: deck #1, deck #2, deck #3, deck #4, deck #1, deck #2, etc.). Run the machine with the reels and note the tightness of the segues from reel to reel. There should be a smooth flow with no dead air. Run through the sequence several times, noting any segues that don't sound right. Lengthen or shorten the dead roll on particular decks until all segues are sounding good.

DRAKE-CHENAULT TAPES

All the tapes you receive from us are recorded at 7 1/2 i.p.s., NAB standard azimuth, level and equalization. Our alignment standard is defined by a special alignment tape we will send you with your automation decks.

All tape is 1 mil., approximately 3600 ft., on 10 1/2 inch reels, NAB standard hub.

All cue tones are 25 Hertz at - 7db. On stereo tapes, the cue tones are mixed with the left channel (upper track) program material.

You will receive a special test tape with your library. This tape is used to set up the stop delay timing on your decks and to identify the upper and lower channels on all tape transports.

The test tapes should be handled carefully and stored in a safe place.

SPECIFICATIONS FOR DRAKE-CHENAULT REELS

Recorded level: 0 VU, +/-2db. (OVU=2000 nWb/M).

Frequency response: 25 to 10 kHz, +/-3db.

Phase error: 90 degrees or less, to 10 kHz.

Speed: 7 1/2 i.p.s., +/-2db.

Cue tone level: 7 db, +/-2db.

Cue tone frequency: 25 Hz, +/-1%

Track format: NAB standard two track stereo or mono.

Distortion: (Function of residual tape distortion).

Noise: (Function of residual tape noise).

Notes: Drake-Chenault tapes are direct hubs from studio masters. No intermediate "dubbing master" is ever used. Station dubs are generated on a real-time duplicating system, operating at 15 i.p.s.. Every slave recorder's recording head is aligned for minimum phase error to each individual pancake of tape, each time the slave is loaded. New tape stock is always used; we never re-use returned tapes. 25Hz cue tones are injected onto station copies during the duplication process by a low distortion generator. Cue tones are never dubbed from master to copy.

PROBLEMS/SOLUTIONS

PROBLEM	SOLUTION
Too much space between tapes when sequenced automatically	Tape machine delays not adjusted properly; re-adjust the second of the machines in the loose segue for less dead roll before audio.
Tapes running with too much overlap when sequenced automatically	Tape machine delays not adjusted properly; re-adjust the second of the machines in the tight segue for more dead roll before audio.
Tapes sound muddy or too bright	Re-check the alignment of your tape machines with our test tape.
Cartridges sound muddy or too bright	Re-check both record and playback alignment on all machines; clean machines.

MAKING THE MOST FROM LIVE ASSIST

There are advantages to operating your station "live assist". To be sure you "make the most" of the advantages, let's review what they are and why they're important.

"Live assist" offers you control of music. Everyone in radio has heard an announcer play his or her favorite song everyday. When this occurs, that favorite song is also usually played at the same time everyday. By following the systems we have setup, which are outlined in the FORMAT section of this manual, you will achieve an excellent rotation of the songs in your format's music library and current music categories.

An additional area of music control includes the peace of mind you get from knowing that all the music that plays on your station is compatible with your audience goals. Our National Program Consultants and Music Department spend a great amount of time every week researching and listening to potential songs for your format.

Another advantage of "live assist" operation is consistency of technical quality. By executing your station "live assist" with a Drake-Chenault format, you have virtually eliminated the sound of scratches, pops, and other surface noise that is present when records are used.

Our production engineers meticulously "cleanup" the sound of records that are used in our formats. It's not unusual to have multiple "pop edits" in our master tapes. After you've fine tuned your equipment and aligned your reel-to-reel decks, as outlined in the TECHNICAL section of this manual, your station will sound better than a station that plays records.

When a station plays records, much of an announcer's time is spent choosing which song to play and "cueing-up" records. By operating "live assist" your announcers have more time to prepare and practice what they're going to say because: (1) the "music mix" on your station is agreed upon in advance by your program director and your Drake-Chenault National Program Consultant; (2) the songs are automatically "cued-up" by the reel-to-reel decks.

Drake-Chenault announcers are available to voice ID's, promos, sell lines, etc. However, since your announcers have a high presence on the air, because they announce music, weather, PSA's, etc., your station will sound more cohesive if station imagery is done locally.

COMMUNITY INVOLVEMENT

Think about the great radio stations. Regardless of format, they are all involved with the audience and areas they want to serve. The organizations that a station's staff belongs to is a form of off the air "Community Involvement". On the air involvement refers to: (1) the station's participation in community events, i.e., a fund raising marathon (2) the information the station airs about the community and the people it wants to serve, i.e., news, weather, PSA's, etc.

In this section you'll find guidelines for the major areas of on the air community involvement: (1) news; (2) weather; (3) PSA's and (4) public affairs.

Remember, everything on your station must reflect the "lifestyle" of your target audience including community involvement. All subjects must be of interest and relevance to your audience. The announcing and writing style must be compatible with your station's format and image.

NEWS

With the increasing fragmentation in radio and the increasing competition from other stations and media for your listeners' time, it's more important than ever that all departments understand totally your station's goals. The cooperation of the news department is critical in accomplishing the image of the station.

Schedule a time to review the station's goals and target audience with the news director. Then set up a regular time to review newscast content and announcer delivery. This kind of communication and understanding will help utilize the immediacy of radio news as an intregal element in the overall success of your station.

News Judgment - Decide what types of stories will appeal to the majority of the station's target audience. The decision should be based not only on stories in your station's geographic service area, but also on other events that would be of interest. For example, if your station serves a market of several communities, some stories would not be of interest outside the community where it occurred. Emphasizing a story about the weather, a gasoline shortage or a public employees strike that could affect the lives of your listeners has more "mass appeal".

A story on inflation based on Federal government cost of living figures is more meaningful when it is localized by talking to a local economist or housewife, who is feeling the effect of inflation on the food budget.

Blend your stories according to topics. Stories on unemployment, inflation, and taxes for example, all relate and make transition easier. It's a logical flow to your listeners.

News Delivery and Style - The goal is communication. Keep that in mind when writing and delivering a newscast. Relate to your "average" listener who needs to understand why his property taxes are going up. Strive to write and deliver a newscast in a natural, conversational, one on one style. Never try to write about something you don't understand.

The first sentence of a news story should be the "title line". It should set the stage for the story and be able to stand alone as a headline. Remember to keep your sentences short, like most people do in conversation.

Establishing Local News Sources - It isn't difficult to get news about your community. Develop an up-to-date file of phone numbers for the local police, fire department, coroner, weather bureau, hospitals, etc.

On a priority basis, regularly make a "phone beat" to those geographically located out of your city or of secondary importance to your audience. The sources you identify as primary should be visited at least once per day. This personal contact will develop your news department's credibility with the sources. Once you have their confidence you'll find their cooperation will increase. Also, get to know the individuals who are responsible for news releases. Know where they can be reached during off hours, weekends and holidays.

An important part of a radio station newsroom is its futures file. Set one up according to the days of the week or future dates. Preparation gives you a jump on your competitor. Chances are, he won't be ready for the day's events and may be just sitting around waiting for something to happen. Be sure to include in your futures file follow-ups from initial stories.

Story follow-ups will get you stories that most stations will fail to get. Remember, your futures file will only be successful if it is updated and maintained every day. A valuable tool and a news source is a "scanner" radio. It will enable you to be aware of a "breaking" story as it happens which is very important if you are to take advantage of the immediacy of radio. After you get the lead from the "scanner" involving the police, fire or another agency be sure to call the agency involved to verify the story for accuracy and authenticity before airing anything.

The Yes Test - Listen to your news. If the following questions can be answered "yes" you are on the way to using news as a positive step toward building the overall image of your station.

1. Is the news relating to my listeners? Picture your target demographics, then write the news for a specific person. Relate to him/her the information of the day.

2. Have unnecessary details in each story been eliminated?

3. Does every news story help the "target person" deal with his world?

4. Does every news story give the listeners information relevant to their lifestyle?

5. If sports are important to your listeners, are several major interest sports stories included in your newscast?

6. Is a majority of your audience affected by the individual stories? Use a scale of one to ten, one being the best. Have the news department judge each story by this criterion.

Your listeners are counting on you for information to get them through the day. Relatable information assures the listener you care about his needs.

WEATHER

The importance of weather to your audience can vary depending upon the geographic location of your station, the time of day, the day of the week, and the appearance of the sky.

In the so-called "sun belt", where the weather is relatively consistent hour to hour, day to day, the exposure profile of weather does not have to be as great as in the Midwest and East. In the Midwest and East, the weather changes rapidly and it's possible that many of your listeners are dependent on weather for income i.e., if they're involved in agriculture, construction, etc.

People's interest in the weather increases toward the weekend as family picnics, ballgames, and other outdoor leisure time activities are planned. Everyday interest is more intense in the morning when your listeners are deciding how to dress.

Of course, if the sky becomes dark and the wind increases, your listeners become concerned for their personal safety and they turn to radio for information on the weather.

The frequency with which you air the weather should be flexible. Before you go on the air, your National Programming Consultant will work with you to set up a weather schedule which will meet the needs of your audience.

The major emphasis in your weather reports should be communication. Have your personnel rewrite the weather reports off the wire. Use language that your listeners can understand. Avoid using a long series of numbers which are confusing. Don't hesitate to "warm up" the weather with appropriate ad libs which will relate local events to the weather. For example:

"It's gonna be a beautiful night for the concert in Miller Park. The low will be....etc."

Here are some guidelines on weather content:

(1) In the morning, people need to know how to dress. Will it be warmer or colder than yesterday? Relate the conditions for the next twelve hours.

(2) In the afternoon and evening, people are interested in how warm or cold it's gotten and the outlook for the next day. Will it be warmer or colder than today?

(3) Overnight, it's the day to come that's important.

(4) Beginning Friday afternoon and running through Sunday afternoon make reference to "weekend weather" and briefly sketch the weather for the entire weekend.

(5) Don't over-emphasize temperatures. They will probably vary several degrees in your coverage area anyway. In your forecasts, use phrases like "high in the upper 70's" instead of "high around 77." The wind speed and direction should be used only when they have special meaning, i.e., very strong and gusty, wind chill, etc.

The weather should be updated on the air every hour with current temperatures. Updated weather forecasts give you additional opportunities to "enliven" the station with a phrase like "it's a beautiful Tuesday morning." If it is not possible to update the weather every hour, several versions of the forecast should be recorded and then updated as often as possible.

PUBLIC SERVICE ANNOUNCEMENTS

Public Service Announcements, (PSA) like news and weather, are not only part of your responsibilities as a broadcaster, but also offer you an excellent opportunity to genuinely serve your community and relate to your target audience.

PSA's should always deal with local topics or national topics that have been localized. A good PSA is 10-20 seconds long, and delivered in a warm, conversational and sincere announcing style.

As in news and weather, paint a mental picture of who you want to listen to your station. Then concentrate on subjects that will be of interest to them and help them.

You may find it useful to divide your PSA's into these three categories: (1) Community Switchboard numbers; (2) Community Calendar announcements and (3) General Information PSA's.

Community Switchboard numbers are the phone numbers of community service agencies that rely on the phone for contact with people they help. Examples include: the police and fire departments, consumer affairs and drug abuse agencies, hospitals and other emergency medical numbers, etc.

A quick source for these phone numbers is the phone book. Look in the first pages for emergency numbers, then under your city and state government and the United States Government. Make sure that each number is correct and that you get permission to use it before you broadcast it.

Community Calendar announcements should inform your listeners about public events that are being held by major civic and social organizations. Identify the organizations that will interest your audience and get on their mailing lists.

General Information PSA topics would include energy conservation, traffic and water safety, and other topics that should help your listeners. Be sure to use your P.S.A.'s to emphasize timely subjects for a short period. On holiday weekends, for example, you should increase topics that are appropriate for your area and time of the year, i.e., traffic safety, water safety, sunburn dangers, etc.

At all times you should run a variety of all the types of PSA's discussed above. Your National Programming Consultant will review your station's commitment and make suggestions regarding how many PSA's you should air each hour based on your needs.

PUBLIC AFFAIRS

Public Affairs programming is the area of a station's commitment that is usually the most difficult to fulfill. Here's how the FCC defines Public Affairs programming:

Public Affairs Programs deal with local, state, regional, national or international issues or problems, including, but not limited to, talks, commentaries, discussions, speeches, editorials, political programs, documentaries, mini-documentaries, panels, roundtables, vignettes, and extended coverage (whether live or recorded) of public events or proceedings, such as local council meetings, congressional hearings, and the like.

Perhaps, because of the definition and the examples, many stations have relegated PA to early Sunday morning or late Sunday night. Public Affairs can be interesting, informative and an intregal part of your programming. You should use the same guidelines for deciding what to do for Public Affairs programming as you do when making decisions about news and PSA content. i.e., Does it relate to your target audience? Will it help them?

A form of Public Affairs, that we've found to be successful, is daily vignettes that deal with local concerns or important national issues that affect your audience. The ascertainment interviews conducted by your station are an excellent source for topics.

Use a question like, "How do you feel about the President's inflation plan?". Then either ask your listeners to call a special "Opinion Line" phone number to voice their comment or send a staff member out with a cassette recorder to gather comments for a "Street Talk" feature.

Whether the name you use is "Opinion Line", "Street Talk", "WXXX Feedback" or another name, the concept is the same. Gather the opinions, edit them so they are concise, and produce the responses into a feature with an approximate length of 60 seconds. Use them throughout the day. Be sure that every time you air the feature that you use a different person or comment. This will keep the vignettes fresh and your audience interested.

Also, tell participants that you may air their comments. You should talk with your legal counsel for other guidelines.

For example, he may want you to get verbal clearance on tape or written permission from people before using their voices on the air.

Your National Programming Consultant is available to discuss other ideas for Public Affairs programming.

TRAFFIC/PRODUCTION

Because the interaction and communication between the traffic and production departments is so important to the smooth operation of your station, both departments will be discussed in this section.

The key to an effective traffic department is the system. Regardless of which system you use, whether it's computerized or manual, it needs to be understood and followed by everybody who has contact with it, i.e., sales staff, production people, etc. A sample traffic system will be reviewed in this section.

Also in this section, you will find a Production Checklist to help you evaluate the quality of your production. Since produced elements account for the second highest percentage of program material in an hour behind music, on a music station, a station's production values have a large influence on its image and success. Don't underestimate the importance of maintaining the highest level of professionalism for all production.

THE CARE AND FEEDING OF A TRAFFIC SYSTEM

First, let's define what a good traffic system needs to accomplish:

(1) Schedule commercials at the correct time on the correct day with the correct copy.
(2) Copy should change without a big panic.
(3) New carts pulled daily.
(4) Outdated carts pulled daily.
(5) Update the sales manager with "availability" information.
(6) Update the sales manager with sales projections daily.
(7) Update accounting with billing information.

All of the above are functions of a traffic department. There are many different traffic systems for getting the job done. Which one you use doesn't matter as long as it's successful.

However, there are certain traffic procedures that need to be used for automation and many of them would be helpful for a "live" station. The traffic system we have outlined can help you install a system or "fine-tune" your traffic department. The step by step outline begins on the next page.

Automation can do anything you want it to in a commercial cluster, within reason, as long as you plan ahead. In a typical commercial cluster you will probably have two or three commercials and a PSA or weather forecast. Ideally, for ease of scheduling, each commercial should originate from a separate random select source, i.e., a Carousel or separate stack of an Audiofile. To do that you need a master identification system. For our example we'll use a Carousel as the cart source.

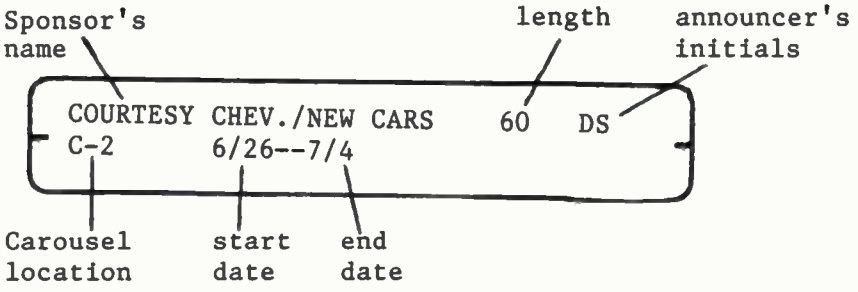
STEP #1 Assign each Carousel a letter designation, i.e., Carousel - A, Carousel - B, etc. As an additional "fail-safe" you should also color code each Carousel. For example: Carousel - A is red, Carousel - B is blue.

STEP #2 Since each Carousel has 24 trays, if you place a cart in tray 15 in the second Carousel, its designation becomes "B-15". If you also instituted the color code system, the cart's label should be marked in the appropriate color. This is helpful because with a quick visual inspection you can make sure that all carts are filed properly.

STEP #3 On a sheet of paper (one page for each Carousel) number 1-24, one for each tray, with a column for END DATE. When an order comes in, assign the account a Carousel letter and tray number.

Hint: Assign all similar accounts, i.e., soft drinks, car dealers, to the same Carousel. This prevents airing competing sponsors back-to-back.

A sample cart label should include the following information:



Any one of your staff members should be able to look at the information on the label of the cart and know if it's supposed to be in a Carousel and which one.

STEP #4 Install a shelf near the automation system with spaces designated for each day of the week. When a cart is completed by production, place it on the shelf in the correct stack that corresponds with the day the cart starts on the air. Who is responsible for adding or replacing carts will vary depending on hours of operation and staff, but most full-time stations add carts at midnight.

STEP #5 At the end of each day the Traffic Director checks a daily diary for new commercials and copy changes against the actual carts that are in the next day's stack and ready to be added. This insures that all carts have been produced and are in the correct stacks.

Additionally, a visual inspection several times a week is advisable to pull commercials that are "dead". Be sure to verify that the account has ended before erasing the cart.

Here are some additional thoughts about handling copy that will contribute to a smooth operation.

1. WORK AHEAD - When an order comes in that requires updated copy or tags, assign all updates to be done at one time. This eliminates a "panic" situation at the end of every day and prevents the embarrassment of airing outdated copy.

2. COPY DEADLINE - To have all copy ready for production by 3 p.m. the day before it airs is not unrealistic. In fact, it's a must for efficient operation. Explain to the sales staff that this is not a personal whim, but rather a goal of flawless operation which benefits everyone.

THE PRODUCTION ORDER

To get your entire traffic system working, you need a production order.

A production order should be filled out for each account. Everything the announcer needs to complete the order should be attached. After the Production Order has been completed, the order should be filed with the "copy" in the sponsor's file. A sample Production Order that has been correctly filled out is on the next page.

PRODUCTION ORDER

TODAY'S DATE 6/23 ANNCR: Don Smith

ACCOUNT Courtesy Chev./New Cars START DATE 6/26

SALESMAN Joe Brown END DATE 7/4

INSTRUCTIONS:

COPY X TAPE X ET TAG

LENGTH OF SPOT: 60 SEC. 2 30 SEC. 2 10 SEC.

COPY SOURCE	CART #	NO. OF CUTS/ LENGTH	START DATE	PRODUCED	DISPOSITION OF CARTS
Tape, cut 1&2	C-2	2-60	(6/26)	X	ON SHELF FOR 6/26
Tape, cut 3&2	C-3	2-30	(6/26)	X	ON SHELF FOR 6/26
			( )		
			( )		

ANNCR. COMMENTS: Copy too long, edited for length

ANNCR: Don Smith

TIME: 9:00

DATE: 6/24/78

THE DISCREPANCY REPORT

In any system there are going to be errors. It's important to record errors that occur so that you can prevent them from occurring again. Considering the many details that make up a broadcast day, it's a challenge to run an error-free operation.

To measure your staff's "attention to detail" and to count mistakes, you should use a Discrepancy Report. Copies should go daily to the General Manager, Program Director and Traffic Director. Always take the corrective action immediately. A sample Discrepancy report is below:

DISCREPANCY REPORT

DATE:_____ TIME:_____ NAME:_____

PROBLEM:_____

_____

_____

REFERRED TO:_____

ACTION TAKEN:_____

_____

INITIAL:_____ DATE:_____

PRODUCTION

Production is an opportunity to set your station apart from the competition. It can greatly affect your listeners' perception of a station's image and level of professionalism.

There are certain technical standards that need to be established at your station and then consistently met. You will find specific technical suggestions in the TECHNICAL section of this manual. Additionally, if you're using automation, all carts must have one second of dead roll at the beginning and the cue tone must be placed one second before the end of the audio on each cart. You'll also find more information about this procedure in the TECHNICAL section under cartridges.

PRODUCTION CHECKLIST

You need to be able to answer "yes" to every one of these questions prior to airing any production on your station. Production includes all commercials, promos, contests, etc.

* Is the announcing flawless?
* Is the audio level consistent will all program elements?
* Is the message clear? Does it easily communicate?
* Is the voice and production style consistent with the image of the station?
* Does audio end with the last word of the announcer? (For the best flow, musical stingers should not be used)

IMPORTANT DON'TS

* Don't use "hit" music for production unless you're promoting a concert or selling an album by an artist.
* Don't announce over the vocal of a record ...EVER.

PROMOTION

The sales department of your radio station sells the importance of advertising. Promotion is another word for advertising and the promotion of any product or business is essential for its success.

The promotion of a radio station offers a unique challenge and opportunity. Since the product is sound and not tangible, it's a challenge to describe your station to make it desirable to the population of your market so that they'll use it. You introduce new people to your station with off the air promotion. After you've brought new listeners to your station, you've got the opportunity to get them to listen to your station more than any other station. That can be accomplished through good programming and on the air promotion.

In this section of the Operations Manual, we'll review off the air and on the air promotion.

OFF THE AIR PROMOTION

The primary objective of off the air promotion is to create an awareness of your station. It should get more people to listen and, therefore, build cume.

Off the air promotion can be designed to promote your format, i.e., "rock", "beautiful", etc., or support on the air promotion, i.e., "Listen to FM 101 for details on how to win a trip around the world". In either case, the effectiveness of your promotion campaign will be determined by the media, placement, artwork, and timing. Ask yourself these questions:

1. What media is available?
2. Does it fit my budget?
3. Will it reach the audience I want?
4. Is the promotion simple and easily understood by non radio people?
5. Is there time to institute the campaign?
6. Am I doing it big enough to have an impact on my market?

Regardless of the off the air promotion you're considering, i.e., TV, billboards, busboards, newspaper, window stickers, sky writing, etc., if you'll ask yourself the above questions, you'll increase your chances for success.

ON THE AIR PROMOTION

The goals of on the air promotion are to create excitement and to remind listeners of what your station is all about.

Theoretically, the excitement should make your listeners want to listen more and, therefore, increase the station's average quarter-hour persons. To create excitement, you don't have to give away a gigantic prize. A number of smaller prizes, that have significance to your target audience and enhance your station's image, can be just as effective. i.e., a long awaited album by a recording artist or tickets to a "sold out" concert.

Station promos are also on the air promotion. It's imperative that you constantly tell your listeners why they should keep listening to your station. i.e., "Q-103 plays your favorite music" or "FM 99 is your Stereo music position".

Your National Programming Consultant is available to "brainstorm" ideas for on air promotion that will work effectively.

Additionally, before airing any promotion, be sure and review the details with your attorney who will be up-to-date on the latest FCC rules and regulations.

MORE ON PROMOTION

There are three forms of promotion that are a combination of off the air and on the air promotion. They are community involvement, merchandising, and special features.

A community event that is organized or co-promoted by your station is an excellent vehicle to build station public relations and increase direct contact with your listeners and potential listeners. Be sure you alert other media in the area to get free media coverage. Examples of good events to become involved with include frisbee contests, raft races, community cleanups, benefit concerts, and other fund raising activities.

Merchandise items such as T-shirts, belt buckles, calendars, and anything else you can put your call letters on are excellent ways to increase your station's visibility. Additionally, it's possible to sell the station's merchandise items to raise funds for a local non-profit organization, which is good public relations and will enhance the image of the station.

Special programming can be used to build your station's audience, solidify its image and make money.

Special features that compliment your format can get your regular listeners to listen more and attract new listeners, when promoted off the air in other media. A special program feature that is compatible with your overall audience goals will also enhance your station's image. On an adult talk station, the special feature could be the broadcast of the World Series. THE HISTORY OF ROCK & ROLL would do the same thing for a contemporary rock station. The key to getting the most promotional value out of special programming includes "telling the people what you're going to do" and then "telling them what you've done". Network TV does this very effectively with the slogan "The Network of the Olympics".

The best advantage to Special Programming is that, in addition to audience and image building, successful special programming should make money. A special program that is aggressively staged and sold should return you in excess of 300% on the investment. The self-liquidating aspect of special programming makes it a great tool for the station with a small promotion budget.

A list of Drake-Chenault special features is on the next page.

DRAKE-CHENAULT SPECIAL FEATURES

* HISTORY OF ROCK AND ROLL The "Silver Anniversary Edition" of this 52 hour spectacular is narrated by Bill Drake. Complete marketing and promotional materials are included. The History of Rock and Roll can be aired as a weekend blockbuster or strip.

* STORY OF COUNTRY MUSIC
This 48 hour epic presentation brings you an anthology of country music's greatest hits by the biggest stars. Close to 1000 songs and 500 interviews highlight this blockbuster event. You get 10 commercial minutes per hour in local avails.

* TOP 100 OF THE 70'S
The music, the events and stars of the 1970's. This 12 hour special is a must for an "oldies" weekend. Hosted by John Leader.

* ELVIS: A 3 HOUR SPECIAL
A feature that's appropriate for contemporary, country and MOR stations. The show is a moving musical tribute to "the King". Narrated by Bill Drake.

* THE PRESLEY YEARS
Definitive story of Elvis Aaron Presley. This 13 hour special features other artist tunes as well as Elvis. Birth to death. Average of ten minutes of avails per hour.

* "LOVE...AND A WHOLE LOT MORE"
A 12 hour special covering the imaginative past-present-and future celebration of the affectionate side of human nature, featuring the most popular contemporary love songs and lyrics of the past two decades. Average of ten minutes of avails per hour.

* EVOLUTION OF ROCK
A 73-hour cultural documentary which chronicles 25 years of rock music and reviews the influence of rock 'n roll on contemporary society. Average of ten minutes of avails per hour.

* CHRISTMAS AT OUR HOUSE
Regardless of your station's format, this 12 hour holiday special is the perfect way to celebrate the joyous season with your listeners.

* HOLIDAY HITS
This contemporary 6 hour holiday special offers interesting stories as well as the music of the season. Laurie Allen hosts this special with hits from Bruce Springsteen, Stevie Wonder, The Carpenters and more! Eight minutes of commercial avails per hour.

* CHRISTMAS IN THE COUNTRY
Six hours of holiday favorites by your favorite country artists. Bob Kingsley hosts this holiday special with the country songs and stories of the season. Christmas In The Country offers eight commercial minutes per hour for local avails.

Call the Drake-Chenault Special Features department for demos, rates and availability at (800) 876-3303. In New Mexico, call (505) 247-3303.

THE EVALUATION

It's very important to learn from your successes as well as the failures. After each promotion is over, you should sit back and evaluate all its aspects. Was the goal clear from the start? Did you accomplish the goal? Were you pleased with the level of response?...the demographics that responded?

Understanding your audience and market will be a great help in planning more successful promotions in the future.

RESEARCH

Research can be a valuable tool to discover or confirm information about your market and audience.

On the following pages are: (1) definitions commonly used in ARB research; (2) examples of how to understand ARB data; (3) an explanation of listener recycling; (4) a formula for figuring average Time Spent Listening (TSL) and (5) at look a local research.

Your National Programming Consultant can help you develop or interpret your own research.

When doing research, remember to keep it simple. It's much better to gather reliable and usable data and to interpret it correctly than to become involved with trivia about your market.

ARB RESEARCH DEFINITIONS & PHRASES

Universe: The estimated total number of persons in the age/sex group and geographic area.

Metro Survey Area (MSA): Metro Survey Area generally corresponds to areas defined by the U.S. department of Commerce as Standard Metropolitan Statistical Areas. (SMSA's)

Total Survey Area (TSA): A geographical area that includes the MSA plus certain counties located outside the MSA.

Area of Dominant Influence (ADI): Arbitron's television geographic area which defines each television market exclusive of others. Every county in the continental U.S. is allocated exclusively to one ADI.

Rating: Of the total Metro population, the percentage listening to your station in a given time period.

Share: Of the total Metro population listening to radio, the percentage listening to your station in a given time period.

Average Quarter-Hour Persons: An estimate of the average number of people who listen to your station for at least five minutes during any quarter-hour of a specific daypart.

Cume Persons: An estimate of the number of different people who listen to your station for at least five minutes during a specific daypart.

Exclusive Cume: The number of different persons that listened only to your station during a daypart.

Trend: The increase or decrease in your audience share compared to previous ratings.

Target Audience: Considering the appeal of your format, the demographic group(s) that should be listening to your station.

Quantitative Research: Explores attitudes or preferences. The feelings that people have about your station, recording artists, announcers, etc.

USING THE ARB

To get a better understanding of your ARB, take a close look at the information on pages two and three. For comparison, you will need your two most recent books. To detect any patterns, you should chart information from the past several books.

The front section will tell you which counties are included in the Metro, TSA and ADI; and the number of returned, usable (In-Tab) diaries received from each county.

Compare the figures from your latest ARB to those from past ARB's. Then ask/answer these questions:

1. Are the same counties included in this survey that were included in past surveys?

2. Do the surveyed counties fall within the primary coverage area of your radio station?

3. Are there any significant increases or decreases in diary-returns from any of the individual counties? From the Metro, TSA or ADI totals?

4. If there are shifts in placement, are they likely to be advantageous, disadvantageous, or have little effect on the ratings success of your station?

5. Which stations are most likely to benefit from this distribution of diaries?

The shifting of diaries that occurs from county to county is just as likely to occur within each county from zip code to zip code. This information is not available from the published book you receive, but can be obtained from Arbitron.

High-density ethnic weighting is also indicated in the front section if it is applicable to your market. To determine the number of ethnic diaries, multiply the percentage-of-ethnic-weighting times in the number of In-Tab Metro diaries.

Compare present ethnic weighting to past ethnic weighting; and then compare it to actual ethnic population in your market.

Page 3A of your ARB is divided into two sections: (1) population estimates and sample distribution by sex-age group. (This is sub-divided into Total Survey Area and Metro Survey Area.) and (2) Diary placement and return information.

By comparing this book to the last book, you can determine any shifts in population. Are there any significant changes in the population as a whole, or in any of the demographic cells? If so why? Did the number of counties in the survey area change? Did a major new industry come to the market?

You can also determine shifts in diary placement and return for Metro, TSA, and ADI (if it applies). In particular, note changes in Total Tabulated Diaries and Effective Sample Bases.

It is possible to determine the number of diaries returned from each demographic cell. Look at the column Percent of Unweighted In-Tab Sample. Take the appropriate percentage and multiply it times the Total Tabulated Diaries.

Example:

There are 459 total tabulated Metro diaries.

459 Total Tabulated Diaries

.028 Percent of Unweighted In-Tab Sample

12.852 Number of Useable Diaries Returned

There were 13 diaries returned from Men 18-24.

Next you can determine the approximate number of persons each diary represents. Divide the estimated population of the demographic cell you're analyzing by the number of diaries (13).

RECYCLING LISTENERS

Recycling listeners is getting people who listen during one daypart to tune in again at some other time as well. Most people listen to two or three different radio stations. That means they are available as listeners more often, but are listening to other stations.

You should make every effort to get that listener to spend more of his radio time listening to your station. You can accomplish this by cross promoting all the program features that are on your station.

*If you run an "album hour" or a controversial talk show in the evening, tell the people who are listening during the morning and afternoon.

*If you provide a lot of news, weather, sports, traffic and other information each morning, promote that at other times of the day.

*If you are giving away plants during the midday, talk about it in the morning, afternoon, and evening.

*You've got the music your listeners want to hear. Remind them that it's on your station around the clock.

These do not need to be highly produced promos. In fact, it is better to use 10-:15 second voice only promos at the beginning or end of a spot cluster. Be sure to include your call letters in every promo.

Take a good look at your programming schedule. What are the highlights you can promote to entice people to spend more time listening to your radio station?

Here's how to figure the percent of your audience "recycling" from one daypart to another.

PERCENT RECYCLING - Cume audience that listens to both dayparts is divided by the cume audience that listens to one of the dayparts.

Example: What percentage of morning drive listeners also listen (recycle) into midday?

STEP #1: Calculate the cume audience that listens to both dayparts.

Men cume, 12+, Mon. - Fri., 6-10am	22,500
Men cume, 12+, Mon. - Fri., 10-3pm	16,200
	38,700
Men cume, 12+, Mon. - Fri., 6am-3pm*	29,500
Cume that listen to both dayparts	9,200

*NOTE: Cume for this daypart is found in the special Cume Estimates for Daypart Combination section in the back of your ARB market report.

STEP #2 Calculate the percent of listeners that recycle from the first daypart into the second.

Cume listening to both dayparts 9,200 = 40.8%
Cume listening to one daypart 22,400

Of the 22,500 cume audience that listens at 6am - 10am, 9,200 (40.8%) also listen 10am-3pm.

In addition to figuring daypart to daypart recycling, you can also determine how much of your weekday audience listens on the weekend.

The following is a base for a comparison compiled by Custom Audience Consultants, (CAC)*, a Maryland research firm. How does your station compare to the average?:

% tuning to more than one daypart	54.1%
% AM drive recycling to PM drive	53.4%
% AM drive recycling to midday	42.2%
% daytime which recycles to PM drive	61.9%

* CAC's President, Sam Paley and her staff of professional analysts have performed diary review and analysis for America's leading broadcast stations and groups since 1974. If you're interested in her work, you can call us for all the details.

TIME SPENT LISTENING

The average amount of time a listener spends with your station can be easily computed with your rating book for any daypart or demographic. The formula:

MINUTES (in the daypart) X AVERAGE PERSONS - CUME PERSONS = TIME SPENT LISTENING (TSL)

TSL can be very helpful in planning your attack for increasing ratings, because it relates to your listeners' SATISFACTION with the station. Since the average TSL will vary depending on format, market size, and competition, we suggest you calculate the listening span for your station and your competition. How do you compare?

* If your audience is listening longer than average, they like what they hear. Plan your promotion attack around introducing more people to the station, i.e., outside visibility...go for cumes.

* If listening time to your station is shorter than average, take action to improve format execution and excitement.

EXAMPLE: In a highly competitive, large market with three contemporary AM stations, what should each station do to improve its 12+ audience

Here's a daily T.S.L. for each station 6AM-midnight:

STATION A: 1080 min. X 8000 - 125300 = 68.9 min. TSL

STATION B: 1080 min. X 4200 - 110400 = 41.0 min. TSL

STATION C: 1080 min. X 6100 - 192600 = 34.2 min. TSL

Analysis: Station A is doing a great job. Cumes are good and it's maintaining listeners. If station A wants to grow it must promote outside because it is not reasonable to expect a longer TSL than 68.9 minutes per day for a large market contemporary station.

Station B has a relatively small, but loyal, audience. Again, in this market it's not reasonable to expect a longer TSL than 41.0 minutes. An extensive visibility campaign is needed.

Station C must work on audience maintenance. Increasing the daily TSL of 34.2 minutes is the quickest way for this station to grow. The people are sampling the station (cume), but not staying.

LOCAL RESEARCH

Specific attitudes and opinions about radio and music in your market can be gathered to help guide you in the growth of your station. As in any research, great care must be taken to insure that it's as accurate as possible and interpreted objectively.

Reliable research must be carefully designed. The sample base and the questionnaire you use can greatly affect the data. Contact Tom Moody at **Drake-Chenault Research** for further information on your stations research needs.

While the design and fielding of a market study can be expensive, the results provide a valuable management tool to use in positioning your station to win!

Most successful stations supplement periodic market studies with an on-going call-out program using local station resources. Within a limited area of questioning, and with great care taken, valuable data can also be gathered in this manner. Your National Programming Consultant can advise you about methods to use and pitfalls to avoid.

TECHNICAL

As the competition for radio listeners continues to grow, it becomes increasingly important that everything about your station be totally professional. This total professionalism is important not only for program material, i.e., music, news, promos, etc., but also in your technical sound.

Electronic technology has allowed consumer "hi-fi" equipment excellent reproduction capabilities. Consequently, the listener is more aware and critical of broadcast audio quality.

At Drake-Chenault, a great amount of care is taken to deliver program material of highest quality. It's critical that regular preventative maintenance be scheduled and performed to give your station the competitive edge.

In this section, you'll find guidelines to help you fine-tune your station's technical sound.

DRAKE-CHENAULT ALIGNMENT TAPE

Our alignment tape has been custom assembled for Drake-Chenault by Magnetic Reference Laboratory of California. It should be used to establish playback head alignment of tape machines that will be used to play Drake-Chenault music tapes. Use LOW TENSION settings on tape machines when rewinding or playing this tape.

NOTE: The alignment tape is supplied TAILS OUT.

HOW TO USE THE ALIGNMENT TAPE

1. Place a half-full ten inch reel of tape on the supply spindle of the recorder to be aligned.
2. Place the Test Tape on the take-up spindle of the recorder.
3. Splice the leader of the Test Tape to the free end of the ten inch reel of tape.
4. Set reel tension switch(es) to LOW TENSION.
5. Rewind the Test Tape onto the ten inch reel. Make certain that the tape does not scrape the reel flanges as it winds.
6. Re-thread the Test Tape back onto its original seven inch plastic low-torque reel.
7. Set the supply reel tension switch to HIGH TENSION. Leave the take-up tension switch at LOW TENSION.

8. Play the Test Tape without stopping the machine. The frequencies on the tape are as follows:
   (1) 700 Hz at 10 db, (2) 10 kHz at 10 db, (3) 70 Hz at 0 db. Zero db is referenced to 200 Nanowebers per meter of magnetic flux strength.
9. As the first tone plays, (700 Hz @ 10 db), adjust the play level of the machine until the output meter reads zero db, or any other convenient reference reading.
10. As the second tone plays (10 kHz @ 10 db), adjust the play back head azimuth for maximum output from both channels. If an oscilloscope is available, adjust azimuth for least phase difference between channels.
11. Once azimuth has been established, adjust playback equalization (high frequency) until output meter reads the same as the first tone indicated as in Step "9".
12. As the last tone plays, (700 Hz @ 0 db), re-adjust playback level until output meter indicates Zero db.
13. After the last tone has played, allow the leader to wind onto plastic take-up reel, then stop the machine and break the splice from the ten inch reel of tape.

NEVER STORE THIS TEST TAPE IN A REWOUND CONDITION. ONCE THE TAPE HAS BEGUN TO PLAY THROUGH A MACHINE, DO NOT STOP THE MACHINE IN THE MIDDLE OF THE TAPE. IF THE TAPE MUST BE REPLAYED, REPEAT STEPS "4" TO "13". KEEP TEST TAPE FROM ANY MAGNETIC FIELD. DE-GAUSS HEADS BEFORE USE.

PROFESSIONAL RECORDER ALIGNMENT AND CALIBRATION PROCEDURES

PLAYBACK SYSTEM CALIBRATION & ALIGNMENT:

WHAT TO DO:	WHY DO IT
Put on alignment tape rewind to first tone.	The MRL is THE STANDARD OF ALIGNMENT.
Play tone: 700 HZ @ db. Set pb level so tone reads ZERO db ON VU METER.	This establishes a reference level for the next tone, 10 KHZ which is used for playback calibration.
Play next tone on MRL: 10 KHZ @ - 10 db. Adjust PB EQ of machine so that it ALSO reads ZERO db ON VU METER.	The first and second tones on MRL are supposed to play back at the same level when PB EQ is properly set.
Adjust PB head azimuth for minimum phase error as observed on scope.	This aligns PB head properly.
Rewind MRL to first tone again; play the tone and watch scope. The phase error should be zero.	If PB head azimuth is wrong, PB phase at 10 KHZ can look good, yet be grossly in error. If it is properly aligned, BOTH 700 HZ and 10 KHZ tones will be in phase.
Play second tone; check to see that PB EQ is still correct. If not, readjust PB EQ as needed.	Adjusting PB head azimuth will change it's output at high frequencies. Always recheck EQ after adjusting a tape head.
Play third tone on MRL. Set PB level of machine so that tone reads ZERO db ON VU METERS.	This establishes STANDARD PLAY-LEVEL.

RECORDING SYSTEM CALIBRATION & ALIGNMENT:

WHAT TO DO:	WHY DO IT
Remove the MRL from the machine. Put on a reel of blank tape.	NEVER RECORD ON AN MRL!
Feed oscillator into input of machine. Monitor machines output on speakers and scope.	Tones from osc. are used for record set-up. Always keep speaker volume low when monitoring hi freq. tones.
Set osc. to 700 Hz. Start machine in record mode. With Input/Repro switch of machine in Repro, adjust record level controls until VU meter indicates zero VU.	Machine is now recording a tone at STANDARD LEVEL.
Set machine's I/R switch to Input. Adjust REC CAL until VU meter reads ZERO VU. Repro & Input positions should match.	Input position on I/R switch is now calibrated. It will indicate what the recorded level will be when machine is put in record mode.
Switch osc. to 700 HZ & - 10 db.	700 Hz @ - 10 db is the reference Level for record EQ adjustment.
Note reading of phase on scope; adjust record head azimuth to to minimum phase error.	This is a "coarse" record phase adjustment.
Adjust record head for minimum phase error as observed on scope.	Correctly sets record head azimuth.
Switch I/R switch to INPUT; observe reading of 10 KHZ tone on VU meters of machines.	This is the reference to which playback of 10 KHZ tone is compared.
Switch I/R switch to Repro; note reading of meters. Adjust RECORD EQ until meters read the same as they did in Input.	This sets Record EQ so that machine records high freq. tones with proper level of pre-emphasis.
Check scope; re-adjust record head azimuth for minimum phase error if needed.	Record EQ adjustments will change the phase of the recorded signal.

TECHNICAL MAINTENANCE

Maintenance of your equipment is very important. We cannot stress enough the need for regular maintenance for all of your equipment. This will keep everything in shape and prevent problems.

The tape recorder is perhaps the most complicated and sophisticated piece of equipment to be found in a broadcast station. It is also the most heavily used (and abused) and most likely to get out of adjustment and calibration. It is comprised of both mechanical and electronic systems which interact with each other and must be carefully understood before adjustment is attempted.

Thread a reel of tape on the machine. Start it in the play mode. Closely examine the tape as it plays off of the supply reel and goes into the first guide. The tape should travel down the center of the reel without scraping the inside of the reel flange. If scraping occurs, the reel turntable of the first tape guide is set at an incorrect height. Consult the service manual for the correct height and adjust these items as needed.

Now inspect the tape as it travels through the head assembly. The tape must travel in a straight line, with absolutely no vertical movement. Look closely at the edges of the tape. They should be straight, not scalloped or "wavy". If they are, the tape is being forced to travel "uphill" or "downhill" as it passes through the head assembly. Determine which guide is at an improper height and reset it. Scalloped tape edges indicate damaged tape, which should be discarded.

Watch the tape as it enters and exits the capstan/pinch roller assembly. Again, it must go in and exit at the same height. As the tape travels from the pinch roller to other guides and/or shut-off arms onto the takeup reel, check to see that it is not being forced to move vertically, and that it does not scrape the inside of the takeup reel flange.

Proper tape tension is critical to the operation of the deck. If the tension is too high, erratic tape speed, high wow and flutter, damaged tapes, and excessive head wear will result. Too low tension will produce high frequency loss and poor start-up characteristics. Check the service manual for manufacturers recommendations. Use an accurate tension gauge for setting. Note: when using one mil tape, best results may be obtained with tensions set slightly lower than manufacturers specifications.

Tape speed should be checked with a tape strobe wheel. Machines using synchronous motors cannot be adjusted; slow speed is usually the result of magnetized motor armature or worn pinch roller. Keep several spare pinch rollers (and drive belts, if deck has belt driven flywheel) on hand. Replace them every six months.

Recorders using servo-driven capstans can be put on speed by adjusting the speed regulating circuit.

Always keep the mechanics of a recorder clean. Clean the heads and guides several times per day. Clean the pinch roller once per day. Inspect the tape after a few passes through the recorder, looking for lines or scrape marks down the length of the tape. These lines indicate a sharp edge on a guide or head that should be remedied. Keep the deck lubricated per manufacturer's instruction. Listen for noisy bearings that may need attention. Check to see that the brakes engage and release properly; improperly adjusted brakes will cause tape damage.

The electronics of a tape machine must be accurately set in order to provide adequate frequency response, low distortion and noise level, and proper headroom. One thing to remember is that the standard to which the machine is set (and all machines of a broadcast facility) is the alignment tape. The recorder's VU meters are only relative indicators that indicate when the machine is producing recordings that match the characteristics of the alignment tape.

In order to maintain extremely high technical standards, Drake-Chenault supplies to each client a custom-recorded alignment tape. This tape is recorded to our specifications by Magnetic

Reference Labs of Palo Alto, California on the same tape stock as that for all Drake- Chenault program materials. It should be used for setting playback level, equalization, and phase of the recorder at your station. This will guarantee absolute compatibility between our equipment and yours. You should check the azimuth of all tape decks every week.

Your tape decks should be cleaned with a Q-tip and denatured alcohol at every tape change (this means several times a day). Heads, rollers and tape guides should be cleaned carefully. A thorough cleaning takes a moment and contributes immeasurably to the quality of your air sound.

Cartridge recorders require the same mechanical and electronic adjustment and calibration as do reel-to-reel recorders. The key word to successful cartridge operation in a radio station is standardization. Standardize on one brand of tape cartridge. Then order alignment cartridges from Standard Tape Labs that is loaded into that type of cart. Preferably all cart machines in your facility should be of the same manufacturer so that all carts are recorded on one master recorder. This is the best way to assure compatibility between cartridge and playback system.

The transport of a cartridge recorder must be carefully adjusted. Most manufacturers will supply specially constructed tools for accurately setting tape head and guide height, zenith, and wrap

(penetration). The pressure roller mechanism of a cart machine is also very important. It must operate smoothly and quickly without excessive noise. The alignment of the pressure roller shaft is extremely critical because it affects the amount of tape skew. If the pressure roller and capstan shaft are not parallel, the tape will skew as it travels through the head area, creating excessive phase error and erratic cartridge operation. Most manufacturers will supply a tool for setting the position of the capstan shaft so that it is indeed parallel.

The cartridge indexing system must be reliable. The cartridge registration must be repeatable so that carts will sit on the deck plate the same way every time they're inserted.

The amount of pressure exerted by the pressure roller will affect the "wow and flutter" of the system. Use a tension checking cartridge and adjust the pressure roller linkage so the pressure roller should be replaced. As a general rule, replace them every three months.

Keep the heads, guides, and capstan shaft demagnetized to prevent high frequency loss and damage to recorded carts.

Procedures for adjustment and calibration of a cartridge recorders electronics and heads are essentially the same as those for a reel-to-reel recorder. Basically, the following sequence should be followed: 1) Playback azimuth & phase, 2) playback level, 3) playback equalization, 4) record bias setting, 5) record head azimuth & phase, 6) record level calibration, 7) record equalization.

Additionally, a cartridge recorder (and playback unit) has a cue tone recording and detection system that must be adjusted for reliable operation of the machine and proper operation of the cartridge when played back in other playback machines.

The cue tone detection circuit must first be adjusted using a cue tone adjustment cartridge, available from Standard Tape Labs. Adjust the detector system so that it reliably detects cue tones recorded at standard levels. For maximum reliability, set the detection threshold so that cue tones recorded as low as 6 db below standard cue level will trip the sensor as well.

Next, adjust the cue tone record circuitry so that it records cue tones of the proper level, frequency, and duration. An inexpensive frequency counter will be helpful here in ascertaining that the cue tone generators are indeed operating on frequency.

Cartridge machines need particular care. Heads and rollers of all cart machines (both single play and multiple play) used on the air and for recording should be cleaned with denatured alcohol each day. Machines should be checked for azimuth with a scope each week.

The turntable is a mechanical device and hence subject to mechanical wear. On a weekly basis, check it for correct speed/noise level. On units using an induction or synchronous motor, speed errors could be caused by a magnetized motor armature. The idler wheel that drives the turntable should be replaced at six month intervals. A worn idler will also cause speed errors as well as excessive rumble and noise.

Direct-drive turntables have no idler wheel, but should be checked for speed drift. Such drift is usually correctable by adjustment of the speed regulating circuit.

Check with the manufacturer of your turntable for suggested lubrication procedures. Never over-oil, or oil a motor or bearing which requires no lubrication. Use non-detergent oil when lubricating.

The tonearm and pickup cartridge operate as a "system" and must be compatible with each other. Present day audio requirements dictate the use of a high quality cartridge and suitable tonearm. Use a high quality cartridge (stereo) and tonearm capable of tracking at 2 grams or less. On a weekly basis, check the tonearm tracking pressure and anti-skating settings. Also check tonearm height to maintain correct vertical tracking angle. Inspect the stylus frequently with a microscope and replace it if it becomes worn or damaged. Always keep several spare stylii on hand, in the studios where turntables are located.

The turntable preamp should be checked weekly for proper output level and playback equalization. A Standard NAB test record is needed for these checks. They can be ordered from your local electronic parts distributor or from the NAB in Washington DC Keep at least two records in stock should one become damaged. Use the record and an accurate AC Voltmeter to set playback level, channel balance and equalization. Using a high quality cartridge and preamp, frequency response should be within 3 db from 40 kz to 15 kHz. You may wish to check for frequency response above 15 kHz; this requires a CBS test record, catalog #STR-130. Any rise or peaking above 15 kHz will produce sever distortion especially with FM transmitter pre-emphasis.

The mixing console is the very heart of any studio and must operate perfectly at all times. As with other radio equipment, the physical or mechanical parts of the console are the most likely to require attention. The internal electronics (amplifiers, transformers, etc.) will generally be reliable, especially if they are solid state or a passive device.

The components of a console that are subject to the most wear are the operator controls: potentiometers (pots), switches, etc. Consoles that use rotary step attenuators will need to be cleaned periodically when they become noisy. Never use spray cleaners on the contacts of step attenuators; such cleaners will in some cases dissolve and destroy the gold plating on the contacts. Instead, gently wipe contacts clean with a cling-free cloth. Tarnished areas can be cleaned with a common pencil eraser or similar non-abrasive device.

Slide attenuators are usually sealed when manufactured. When they become noisy, they should be replaced. Spraying "contact cleaner" into a slide pot will remove the lubricant from the slide tracks and render the unit unusable. Always keep a few spare slide pots in stock for immediate replacement.

Console switches can usually be cleaned with contact cleaner when they become noisy. A "relay contact burnishing tool" is helpful for polishing contacts that become pitted or corroded with age. Again, keep a stock of replacement switches on hand for emergencies.

The electronic components of a console are usually so reliable that many engineers forget to check them! Fortunately, solid state devices rarely change characteristics with age. When one does fail, it produces malfunction that demands immediate attention. The console should be checked at six month intervals for frequency response, harmonic and intermodulation distortion, noise level, and headroom. Ideally, all audio signals entering and exiting the console should be the same level. Standard levels for broadcast equipment are +4 and +8 dbm. Frequency response should be within one db from 30 to 15 kHZ, with less than .18% distortion at any frequency. The console should be capable of at least 15 db of headroom above nominal output level, with a noise figure of 70 db below that level.

Inadequate frequency response could be the result of improper impedance matching between audio source and console, or between console output and load. All studio equipment should interface directly with the console, with balanced inputs and outputs capable of driving 600 OHM loads to at least +18 dbm. If consumer audio equipment must be used in isolated cases, be sure that the console input will not "load" the output of the consumer device. A

consumer recorder, for example, will produce only -10 dbm level into a 10 K ohm load. A line amplifier between such a recorder and console input will be required to boost the output level to nominal +4 dbm, and reduce the source impedance as well.

Excessive distortion can be caused by impedance mismatching, or by a defective amplifier or transformer. Coupling capacitors between amplifier stages will age and change value or open up completely, causing low frequency loss and high distortion as well. In some cases, transformers provided as original equipment are of mediocre quality (or outdated) and can be replaced with superior units to improve distortion and transient response.

There is too much variation in console design to discuss here, but a call to the manufacturer can save much time in trouble-shooting and improving performance.

The console VU meters are often abused and damaged. Meters that stick and bind will make level setting and operator gain-riding difficult; these should be replaced. Inexpensive voltmeters calibrated in db's are not VU meters. They do not conform to industry standards for frequency and ballistic response and should not be used as such. Unfortunately, many consoles currently being manufactured are shipped with these low quality "pseudo VU" meters installed; it would be wise to replace them with the real thing to avoid level inconsistencies and sloppy operation.

(Note: Accurate VU meters cost not less than $35.00 each.) Peak-program meters ("PPM") are a worthwhile addition to any console. They allow the operator to see audio peaks that would not be revealed by a conventional VU meter. Careful attention to PPM's can reduce distortion on recorded material by preventing tape saturation by these peaks. A word of caution is in order here: Readings between VU and PPM meters will not always correlate reliably. This is due to the unpredictable "peak-to-average" level ratio of the program material. A mental average between two types of meter will be needed for reliable operation.

Equipment start/stop pushbuttons are also a console convenience. Be careful however, so that no high-voltage is brought into close proximity of audio lines. Loud "pops" could result if this happens. Older equipment (such as Ampex 350 series recorders) should be controlled through a low-voltage interface, so that no 110 volt lines need to be brought into the console itself.

Any studio can benefit by the addition of such equipment as equalizers, noise reduction devices, distribution and line amplifiers, reverb units, etc.

Equalizers come in three basic types: shelving, graphic, and parametric. Any equalizer should be compatible with professional studio equipment. Attempting to interface a consumer equalizer with a professional recorder will produce high distortion due to lack of headroom. (Consumer devices have a maximum output voltage of about +5 db, not +18 db). The type of EQ to be used is a subjective choice, but keep in mind that shelving and graphic equalizers are easiest to use. Parametrics require knowledge of tuned circuit design and should be used only by very experienced personnel.

Noise reduction devices such as Dolby and DBX are useful in reducing tape noise of locally produced programming. A very useful device is an autocorrelator which removes much surface noise from phonograph records. This is a consumer device and hence must be interfaced with the phono preamp accordingly. If a phono preamp being used has a "tape monitor" circuit, the autocorrelator can be inserted in this loop. Transient noise eliminators, such as SAE 5000, are effective in removing some record scratches, tics, and pops. This is also a consumer unit, and must be carefully interconnected with studio equipment.

It is always a good policy to have a rack mounted line amplifier in the studio that has high impedance inputs, about 20 db of gain, and low impedance outputs. Should an emergency situation arise where a piece of consumer gear, i.e., cassette recorder, etc., needs to be fed into the console, a line amplifier will provide the necessary gain and impedance match.

Reverb units are useful production tools. Use a professional unit (not a spring attachment for a guitar amplifier) for best results. The reverb systems should be patchable so that any single source can be fed to it, or the entire console output as well.

The monitor system is the critical link from electrical audio signal to audible sound. The monitor amplifier should have adequate power to drive the loudspeakers to a loud level without overload. An amplifier with too little power that overloads easily can damage speaker components much more readily than one with many times the power capability. The amplifier should be checked yearly to ascertain that its response and distortion are within specifications.

The monitor speakers should be chosen with careful attention to relative frequency response. Professional units should be chosen over consumer units; they are more rugged and will need less frequent replacement of drive units. Preferably, the same speaker type should be used throughout the facility, assuming that the acoustics of various studios are relatively close. Speaker

controls for midrange and tweeter levels should be set by the engineering staff, and never touched! Remove the knobs or cover the controls if necessary. Once the production staff has become accustomed to the "sound" of the studio, any change in monitor system EQ can create havoc in maintaining a consistent air sound. On a weekly basis, listen carefully to the monitor speakers to be certain that there are no damaged drivers or misadjusted EQ controls. Keep a spare tweeter and midrange driver in stock (or better yet, a complete loudspeaker) for immediate installation should problems arise.

Note: It's a good idea to fuse speaker lines in such a way that the fuses are easily accessible by studio personnel. Panel mounted fuse holders in the main equipment rack are ideal. Use quick blowing instrument fuses. A good estimate of fuse value is 2 amps for medium size speakers (JBL 4311, etc.) and monitor amplifier power of 75 watts per channel. Slightly higher or lower fuse ratings may be needed to suit your monitor system. In any case, fuses are less expensive to replace than tweeters.

The old practice of equalizing an entire radio station to sound good on a four-inch portable radio speaker is never recommended. Productions that sound clean and well-balanced on monitor speakers will indeed sound good on lower quality speakers.

Limiters and compressors are essentially all-electronic devices with few mechanical parts to wear out. They should be checked yearly for frequency response, distortion and limiting action to confirm proper performance. When checking response, be sure to disable the limiting function for true readings.

At Drake-Chenault, music is left essentially in its original form; no processing or equalizing is employed in the dubbing process. Music is not compressed or peak limited in any way. Locally produced material should be handled in the same manner. Some commercial spots may require some compression, but always use compression and limiting sparingly!

A word on the human hearing process is in order here. We do not hear with our ears. We hear with our brains. The ears are only microphones that transform varying air pressure ("sound waves") into an electrical output, which is sent to the brain. The brain is where the sensation of "sound" is generated. The brain, being an incredibly sophisticated device, takes into account several aspects of its input when determining what type of sound it generates. Our hearing mechanism is sensitive to the spectral distribution of what it receives, as well as its intensity (NOT loudness), phase relationship, frequency, dynamic density and direction or origin. In conclusion, our hearing system is substantially more sophisticated than a VU meter or modulation indicator!

The brain takes into account all of these parameters in determining what sounds are: a) "loud" vs "soft", b) "pleasant" vs " distressing", c) of "high" vs "low" quality.

It is of extreme importance that this be understood when determining the "sound" of a radio station. Listeners do not monitor your station with a modulation monitor or VU meter. Only misinformed Sales, General Managers and Program Directors do. Because the listener is using the best "modulation monitor" in the world, he shall determine the way the station should sound - not the meter or your modulation monitor.

What determines "good" sound? Good sound is clean sound - not heavily equalized, compressed, or otherwise distorted. The human brain has in it automatic discriminate audio processors and limiters, and will tend to un-do such distortion. The brain translates wide dynamic range and wide frequency content as pleasing and loud. Conversely, aural input to the brain which is frequency-restricted and lacking in dynamics is perceived as "poor" and "fatiguing".

The lesson to be learned here is that the sound of a successful radio station must be determined by listening to the station for several hours. Make the station sound good, as opposed to making the modulation monitor read 95% at all times. Keep it clean.

It can be concluded from the preceding discussion that the type and amount of audio processing used by any radio station lends itself to many subjective decisions.

Before making changes in the sound of a broadcast station, listen to it carefully on a high quality tuner. It would be ideal to obtain a state-of-the-art consumer stereo system for this purpose. If none is available, you may be able to rent a hi-fi store's listening room for several hours during their "slack sales" hours, perhaps in the morning.

Listen and compare your station to your competitors. Any aural anomalies will be readily apparent. If a tape recorder is available, make recordings of several stations in your market while comparing. This would be useful when checking the "before" and "after" sound of your station if changes in processing are made.

The processing requirements for AM and FM stations differ, and cannot be discussed in detail here. However, the key criteria are: a) Does it sound good, clean, and listenable over long periods of time?, b) Is the overall sound consistent from one program element to the next?, c) Is it the best sounding station on the dial?

If the answer to "c" above is "no", you may wish to enlist the "calibrated ears" of a local audiophile to help in determining

specifically what is in error. It is not uncommon for broadcasters to be a bit too equipment-test-tone-distortion-measurement-specification-oriented to be a reliable aural trouble shooters.

The transmitter is the link from your studio to your listener. It must faithfully transmit exactly what is fed into it. It is also the one piece of equipment that is least likely to be replaced frequently for obvious reasons.

The transmitters of today are capable of better and louder performance than those of yesterday. No amount of audio processing can compensate for this. In fact, it will only make things worse.

There are only a few things that can be done to an old AM transmitter to improve its performance. Check with the manufacturer for modification ideas.

FM transmitters can be improved by modifying or replacing the exciter and/or stereo generator. Exciters and stereo generators of the past two years have proven to be substantially better sounding than those of only a few years back. Again, audio processing can never make up for poor transient response of an old transmitter. (Remember: excellent transient response is interpreted by the brain as loudness.) Although discussion of equipment specifications is

impractical here, it is fortunate that exciters and stereo generators of different manufacturers will work with various brands of transmitters. An upgrade in this area could make a substantial improvement in station sound quality.

Regardless of transmitting equipment used, "Proof of Performance" tests should be done at least once per year.

You should test for frequency response, separation (if stereo), noise level, intermodulation products between stereo pilot and SCA subcarriers, and transient capabilities. AM stations should check the frequency response "Q" of the antenna system as well. Transmitter power (loudness in the case of AM stations) can be wasted if the antenna is not capable of radiating all frequencies fed into it. Improperly aligned FM antennas can seriously degrade stereo separation and phase coherency; this is one area that can be checked if these problems arise.