HARRIS 900Z AUTOMATION
TECH/OPERATION MANUAL

# TECHNICAL MANUAL

OPERATOR MANUAL

9000 PROGRAM CONTROL

994 7153 007/008

MODELS 9001, 9002, 9003



HARRIS CORPORATION

Broadcast Products Division

T.M. No. 888-1987-001

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WARNING

THE CURRENTS AND VOLTAGES IN THIS EQUIPMENT ARE DANGEROUS. PERSONNEL MUST AT ALL TIMES OBSERVE SAFETY REGULATIONS.

This manual is intended as a general guide for trained and qualified personnel who are aware of the dangers inherent in handling potentially hazardous electrical/electronic circuits. It is not intended to contain a complete statement of all safety precautions which should be observed by personnel in using this or other electronic equipment.

The installation, operation, maintenance and service of this equipment involves risks both to personnel and equipment, and must be performed only by qualified personnel exercising due care. HARRIS CORPORATION shall not be responsible for injury or damage resulting from improper procedures or from the use of improperly trained or inexperienced personnel performing such tasks.

WARNING

ALWAYS DISCONNECT POWER BEFORE OPENING COVERS, DOORS, ENCLOSURES, GATES, PANELS OR SHIELDS. ALWAYS USE GROUNDING STICKS AND SHORT OUT HIGH VOLTAGE POINTS BEFORE SERVICING. NEVER MAKE INTERNAL ADJUSTMENTS, PERFORM MAINTENANCE OR SERVICE WHEN ALONE OR WHEN FATIGUED.

Do not remove, short-circuit or tamper with interlock switches on access covers, doors, enclosures, gates, panels or shields. Keep away from live circuits, know your equipment and don't take chances.

FIRST-AID

Personnel engaged in the installation, operation, maintenance or servicing of this equipment are urged to become familiar with first-aid theory and practices. The following information is not intended to be complete first-aid procedures, it is brief and is only to be used as a reference. It is the duty of all personnel using the equipment to be prepared to give adequate Emergency First Aid and thereby prevent avoidable loss of life.

WARNING

IN CASE OF EMERGENCY ENSURE THAT POWER HAS BEEN DISCONNECTED.

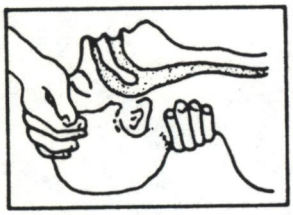
## Treatment of Electrical Shock

1. If victim is not responsive follow the A-B-Cs of basic life support.

PLACE VICTIM FLAT ON HIS BACK ON A HARD SURFACE

### (A) AIRWAY

IF UNCONSCIOUS,
OPEN AIRWAY



LIFT UP NECK
PUSH FOREHEAD BACK
CLEAR OUT MOUTH IF NECESSARY
OBSERVE FOR BREATHING

### (B) BREATHING

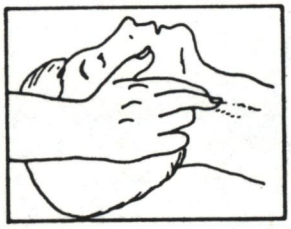
IF NOT BREATHING,
BEGIN ARTIFICIAL
BREATHING

TILT HEAD
PINCH NOSTRILS
MAKE AIRTIGHT SEAL

4 QUICK FULL BREATHS

REMEMBER MOUTH TO MOUTH RESUSCITATION
MUST BE COMMENCED AS SOON AS POSSIBLE

CHECK CAROTID PULSE



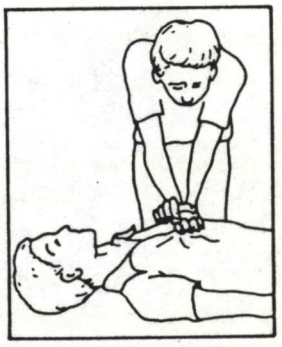
IF PULSE ABSENT,
BEGIN ARTIFICIAL
CIRCULATION

### (C) CIRCULATION

DEPRESS STERNUM 1 1/2" TO 2"


APPROX. 80 SEC. { ONE RESCUER
15 COMPRESSIONS
2 QUICK BREATHS

APPROX. 60 SEC. { TWO RESCUERS
5 COMPRESSIONS
1 BREATH



NOTE: DO NOT INTERRUPT RHYTHM OF COMPRESSIONS
WHEN SECOND PERSON IS GIVING BREATH

Call for medical assistance as soon as possible.

2. If victim is responsive.

   a. keep them warm
   b. keep them as quiet as possible
   c. loosen their clothing
      (a reclining position is recommended)

Treatment of Electrical Burns

1. Extensive burned and broken skin

   a. Cover area with clean sheet or cloth. (Cleanest available cloth article.)
   b. Do not break blisters, remove tissue, remove adhered particles of clothing, or apply any salve or ointment.
   c. Treat victim for shock as required.
   d. Arrange transportation to a hospital as quickly as possible.
   e. If arms or legs are affected keep them elevated.

NOTE

If medical help will not be available within an hour and the victim is conscious and not vomiting, give him a weak solution of salt and soda: 1 level teaspoonful of salt and 1/2 level teaspoonful of baking soda to each quart of water (neither hot or cold). Allow victim to sip slowly about 4 ounces (a half of glass) over a period of 15 minutes. Discontinue fluid if vomiting occurs. (Do not give alcohol.)

2. Less severe burns - (1st & 2nd degree)

   a. Apply cool (not ice cold) compresses using the cleanest available cloth article.
   b. Do not break blisters, remove tissue, remove adhered particles of clothing, or apply salve or ointment.
   c. Apply clean dry dressing if necessary.
   d. Treat victim for shock as required.
   e. Arrange transportation to a hospital as quickly as possible.
   f. If arms or legs are affected keep them elevated.

REFERENCE: ILLINOIS HEART ASSOCIATION

AMERICAN RED CROSS STANDARD FIRST AID AND PERSONAL SAFETY MANUAL (SECOND EDITION)

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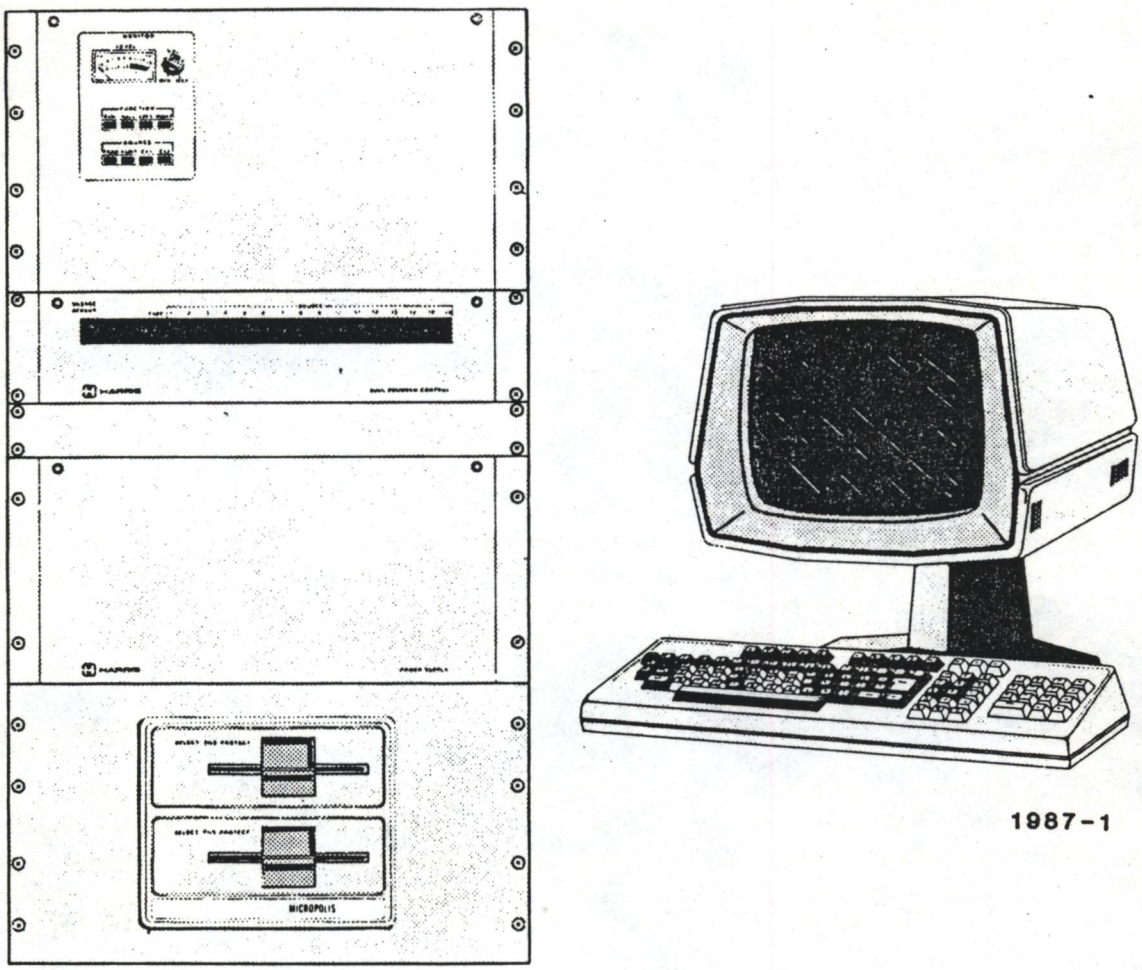



Figure 1-1. 9000 PROGRAM CONTROL



WARNING: Disconnect primary power prior to servicing.

SECTION I

INTRODUCTION

## 1-1. SYSTEM DESCRIPTION

1-2. The 9000 PROGRAM CONTROL with Multi-File™ Program Memory is a computerized automated program controller designed for AM and FM radio broadcast. There are three models in the 9000 series. Each model consists of four major basic assemblies; a Control Console (CRT) with keyboard, a Program Controller, an Audio-Control Switcher, and a Power Supply. The models are identified as follows:

a. Model 9001. This model is the most basic with option capabilities for a Logging Encoder, Input/Output module, a second CRT Terminal, a Log Printer, and two additional RAM modules.

b. Model 9002. This model contains the same options as the Model 9001 except that the Log Printer, second CRT Terminal, and the Floppy Disk and Drive are standard equipment.

c. Model 9003. This model contains all the options as standard equipment with a Customer Interface module (this replaces the Limit module) and additional software.

1-3. The system allows program material to be automatically scheduled and played at the desired time and generates a program log for verification of the program schedule. The basic system uses a CRT display and editing keyboard as a control terminal, a 1999 event source memory (expandable to 9999 events), 127 compare time entries, a 64 x 5 format table, and a 7-day clock and compare time routine.

## 1-4. CONTROL CONSOLE

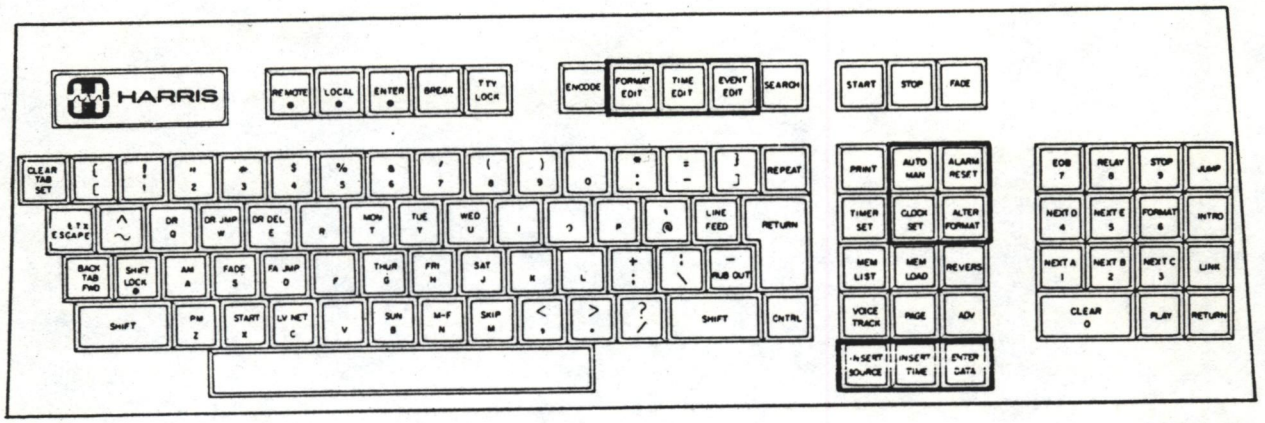
1-5. The Control Console is a portable, self-contained assembly that can be positioned within 150 feet of the system. The control electronics and power supply are rack-mounted in a standard 19-inch rack with the audio sources and optional equipment, if any. The console consists of a HARRIS modified TEC 70 Cathode Ray Tube visual display and keyboard.

SECTION II

CONTROLS AND OPERATING PROCEDURES

## 2-1. INTRODUCTION

2-2. The 9000 PROGRAM CONTROL provides the capabilities for unique and standard broadcast operations and programming. It is a very versatile unit and can be customized to user requirements and has the potential for future expansion. This section identifies the most commonly used keys and gives the operating instructions for the equipment. Prior to performing these operating procedures, refer to paragraph 3-1, System Turn-On.




Primary Function Keys 1987-2

2-3. PRIMARY FUNCTION

2-4. The Primary Function keys are used as follows:

a. FORMAT EDIT

1. Initiates format edit mode.

2. Permits operator to enter new format number for editing or review.

b. TIME EDIT

1. Initiates time edit mode.

2. Permits operator to enter new time data for editing or review.

c. EVENT EDIT

1. Initiates event edit mode.

2. Permits operator to enter an event number for editing or review.

d. AUTO/MAN

1. Terminates editing if in edit modes; otherwise, switches auto/man modes.

2. Updates CRT display.

e. ALARM RESET

1. Disables alarm relay if activated.

2. Removes alarm messages from display (except Time Decks Disabled).





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f. CLOCK SET

1. Allows resetting of real-time clock.

2. When depressed twice, re-enables time decks following power failure, clears Time Decks Disabled alarm messages.

g. ALTER FORMAT

1. Permits operator to observe or change the on-air event pointers A, B, C, D, and E.

2. Permits changing the on-air pointer to a different file (A, B, C, D, or E).

h. INSERT SOURCE

1. Permits operator to insert any playing instruction as NEXT.

2. Permits operator to clear a previously entered insertion.

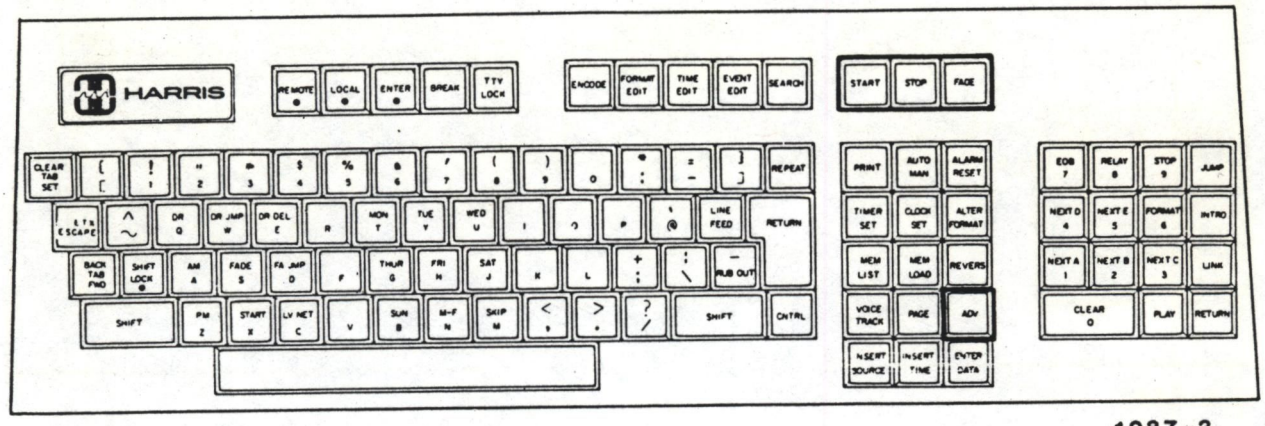
i. INSERT TIME

1. Permits operator to insert any time function as NEXT, overriding any memory instruction that would normally execute during the wait.

j. ENTER DATA

1. In any mode, permits the operator to begin data entry when a cursor is not present.

2. In any mode, permits the operator to restart an entry from the nearest entry point.




Manual Mode Keys 1987-3

2-5. MANUAL MODE

2-6. The Manual Mode keys are used as follows:

a. START

1. If next source is ready, starts next source.

2. Provides audio overlap for the source previously playing, as long as the key is held depressed.

b. STOP

1. Removes all on-air audio.

c. FADE

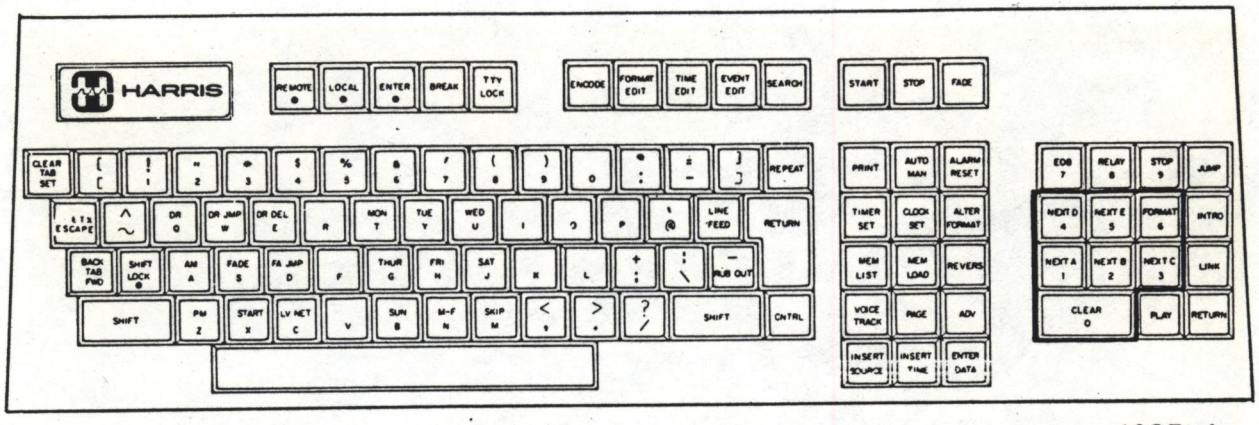
1. Fades out all on-air audio.

2. If the system is placed in AUTO mode before completion of fade, end of fade will simulate end-of-message (EOM) to start NEXT source.

d. ADV (Advance)

1. Bypasses (skips) the programmed NEXT event.

2. If inserted source is next, cancels the insertion.




Display Control Keys 1987-4

2-7. DISPLAY CONTROL

2-8. The Display Control keys are used as follows:

a. CLEAR (normal display)

1. Playing events are bright.

b. NEXT A through NEXT E (alternate highlighting)

1. Permits any specific file (A through E) to be highlighted instead of the playing event.

2. May be used with bar graph.

3. Depressing NEXT A through NEXT E keys selects the alternate displays.

c. FORMAT (for optional bar graph)

1. Adds or removes bar graph from display.

2. May be added to either of the above displays.

3. Aids in observing nesting of subroutines.

The system will remember which of the above displays is preferred and will continue to provide such display, even after the display has been removed by editing.





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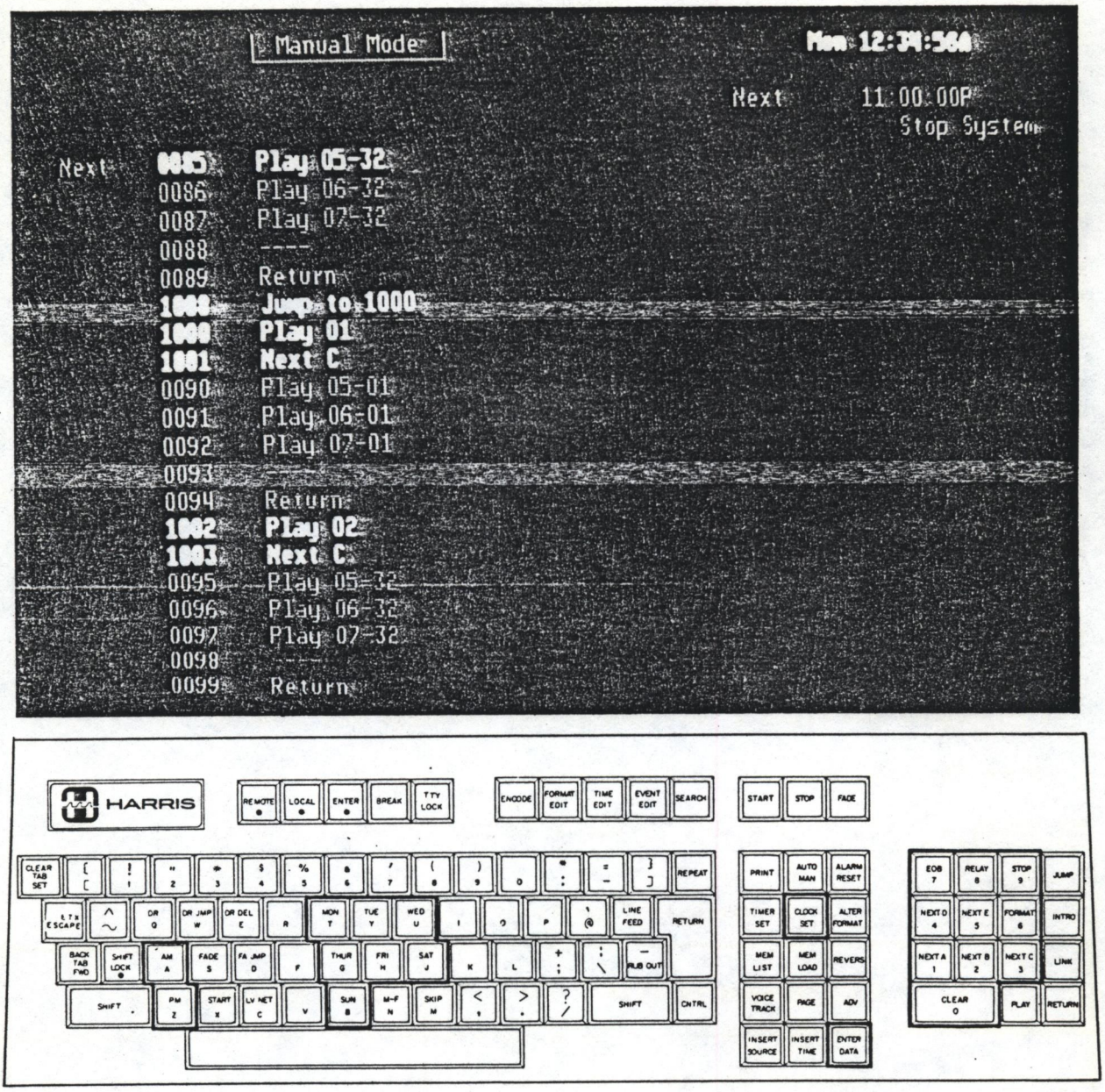



1987-5

Clock Set Keys and Display

2-9. CLOCK SET

2-10. The Clock Set keys are used as follows:

a. ENTER DATA

1. Used to restart entry of time.





WARNING: Disconnect primary power prior to servicing.

b. To start the clock upon completion of the entry

1. Depress the CLOCK SET key to reset and start the clock.

c. To leave the mode without changing

1. Begin other editing mode.

2. Depress the AUTO/MAN key if no other editing is desired.

d. To re-enable the time decks

1. Depress the CLOCK SET key twice in succession to re-enable the time decks following a power failure (without affecting the clock time).

e. Error Messages

1. If COMMAND NOT UNDERSTOOD appears; system expected a valid command.

2. If DIGIT NOT UNDERSTOOD appears; system expected a digit from 0 through 9 only.

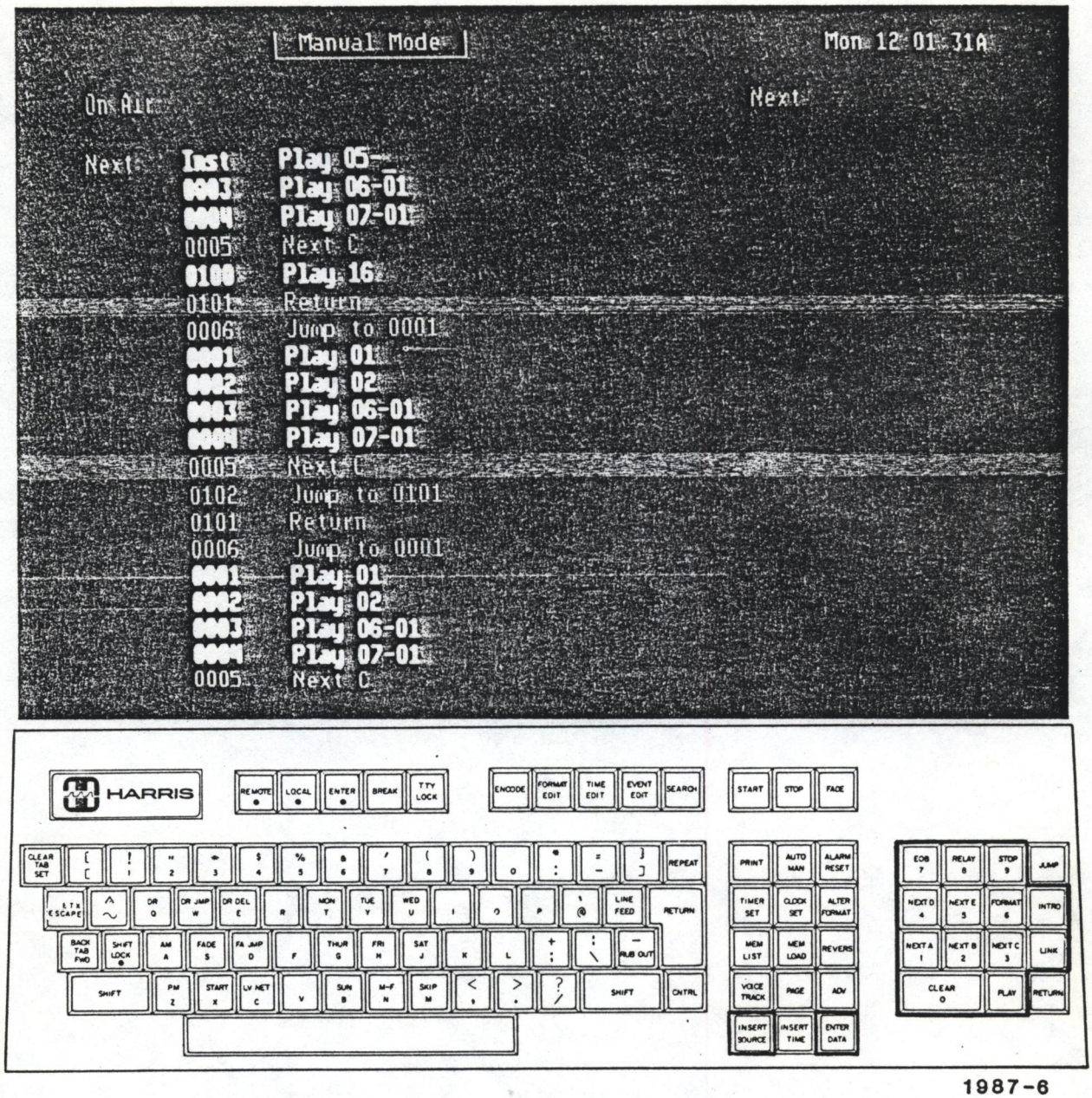
3. If WHAT DAY appears; system expected a valid day code.

4. If AM or PM appears; system expected only the AM or PM keys.

5. If ENTRY NOT UNDERSTOOD appears; the numeric part of entry is invalid.

Clock Set Operating Procedures

| KEY DEPRESSED | DISPLAY PRESENTATION |
|---|---|
| a. CLOCK SET | Clock time replaced by cursor. |
| b. Enter day, time, AM or PM | Day and time displayed as typed. Wait for correct day and time to appear on the display. |
| c. CLOCK SET | |




1987-6

Insert Source Keys and Display

2-11. INSERT SOURCE

2-12. The Insert Source Keys are used as follows:

a. ENTER DATA

1. Used to restart any entry.





WARNING: Disconnect primary power prior to servicing.

b. Available Comands

1. PLAY, LINK or INTRO commands followed by valid source/shelf data.

c. Error Messages

1. If COMMAND NOT UNDERSTOOD appears; system expected a valid command.

2. If DIGIT NOT UNDERSTOOD appears; system expected a digit from 0 through 9 only.

3. If NOT AN AVAILABLE SOURCE appears; an attempt to enter non-existent source was made.

4. If SHELF ENTRY NOT UNDERSTOOD appears; the shelf data is outside the usable range of locations for a particular random access machine.

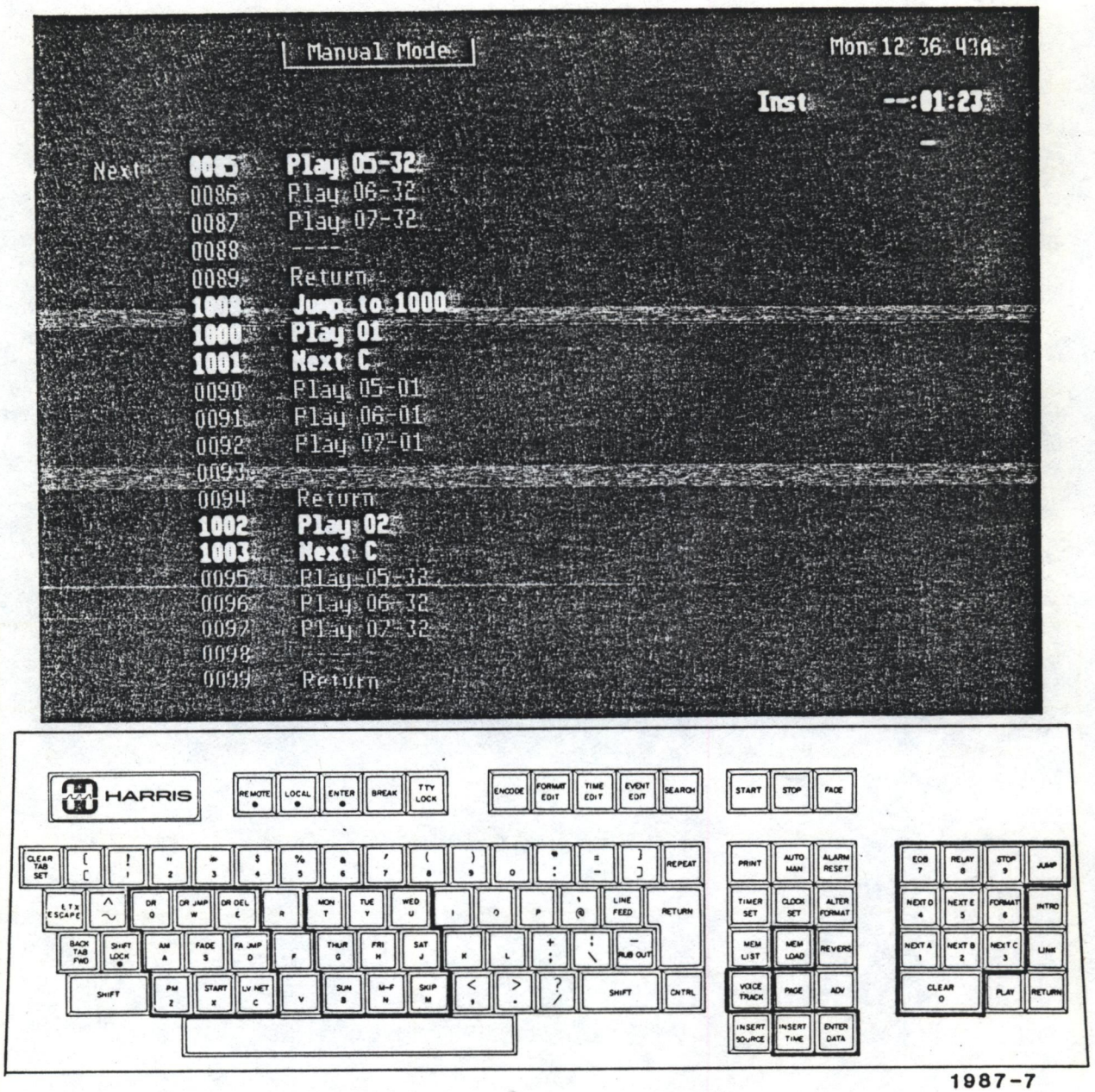
5. If ENTRY NOT UNDERSTOOD appears; the numeric part of entry is invalid.

d. CLEAR

1. Erases a previously entered insertion.

Insert Source Operating Procedures

| KEY DEPRESSED | DISPLAY PRESENTATION |
|---|---|
| a. INSERT SOURCE | Next event replaced by cursor. |
| b. PLAY, LINK or INTRO, as desired | Whichever key is depressed, that command will appear on the display. |
| c. Source/Source tray | EXAMPLE:<br>Source 06 and shelf 10 is selected, digits 06-10 appear on the display.<br>NOTE<br>The lookahead display will be re-adjusted so as to appear one line below the insert. |




1987-7

Insert Time Keys and Display

2-13. INSERT TIME

2-14. The Insert Time keys are used as follows:

a. ENTER DATA

1. Depressed to restart any entry.





WARNING: Disconnect primary power prior to servicing.

b. Error Messages

1. If COMMAND NOT UNDERSTOOD appears; system expected a valid command.

2. If DIGIT NOT UNDERSTOOD appears; system expected a digit from 0 through 9 only.

3. If WHAT DAY appears; system expected a day or day group entry only.

4. If AM or PM appears; system expected an AM or PM entry only.

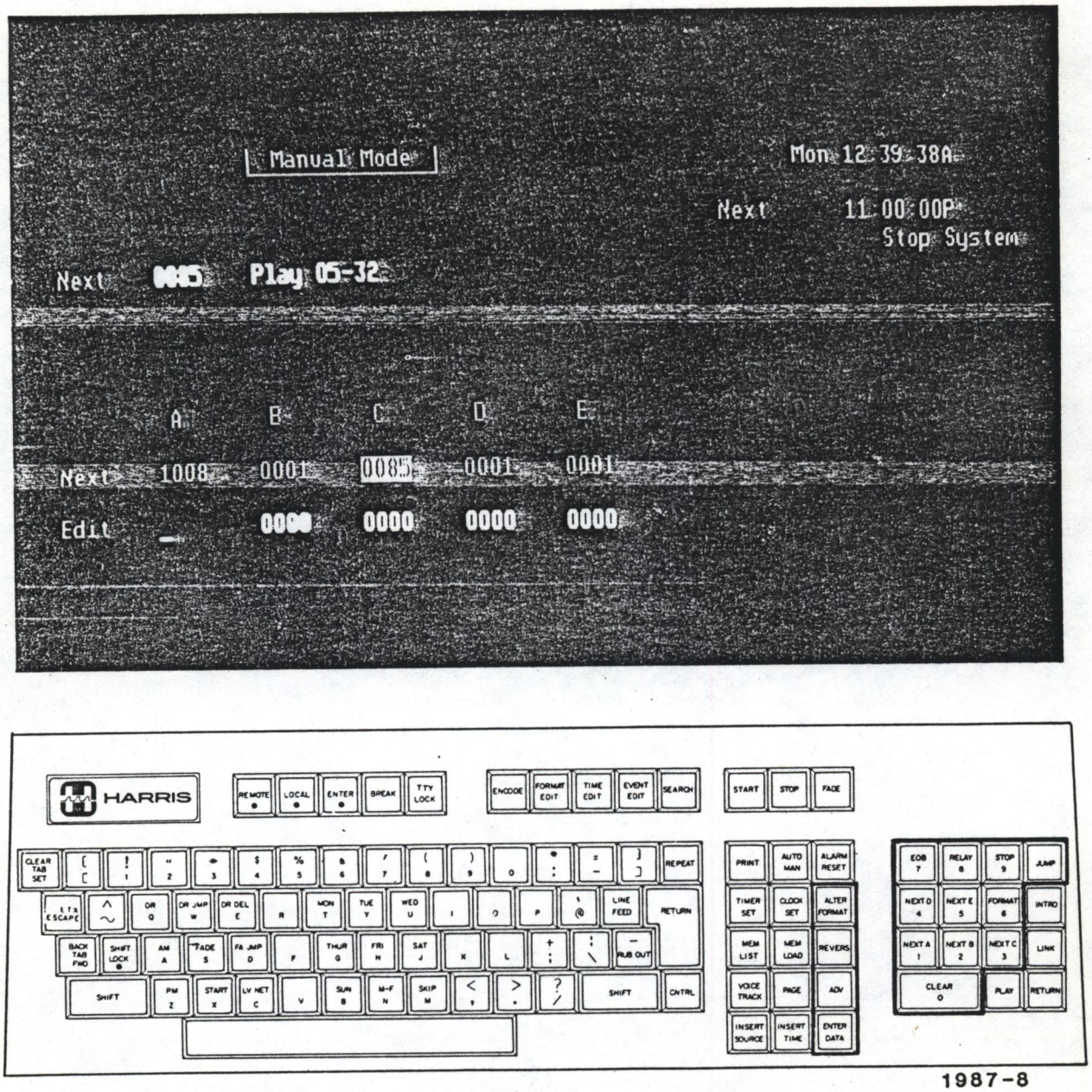
5. If ENTRY NOT UNDERSTOOD appears, an invalid numeric data entry was made.

c. CLEAR

1. Erases a previously entered insertion.

Insert Time Operating Procedures

| KEY DEPRESSED | DISPLAY PRESENTATION |
|---|---|
| a. INSERT TIME | Next time correction (normally displayed) is replaced by a cursor. |
| b. Day or Day Group, Time, AM or PM | Data is displayed as typed. |
| c. Enter desired time function | EXAMPLE:<br>RELAY 02 is desired<br>Depress RELAY key and digits 0 and 2 appears on display and is bright, indicating an insertion, and the cursor disappears.<br>NOTE<br>The bright display fades to normal when the time entered in step b. is reached. |




1987-8

Alter Format Keys and Display

2-15. ALTER FORMAT

2-16. The Alter Format keys are used as follows:

a. ADV and REV (Advance and Reverse)

1. Moves editing cursor left or right.





WARNING: Disconnect primary power prior to servicing.

b. ENTER DATA

1. Permits operator to restart any entry.

c. JUMP

1. Permits operator to set a different file as NEXT.

d. Error Messages

1. If COMMAND NOT UNDERSTOOD appears; system expected a valid command.

2. If DIGIT NOT UNDERSTOOD appears; system expected a digit from 0 through 9 only.

3. If NOT AN AVAILABLE EVENT appears; the event entry was out of range of usable events in the system.

e. Observing the NEXT display

1. Updated by system upon event execution.

2. NEXT file pointed to by reverse video.

f. To perform the format alteration once entered

1. Depress the ALTER FORMAT key again to execute.

g. To leave the mode without changing anything

1. Begin some other editing mode.

2. Depress the AUTO/MAN key if no further editing is desired.

Alter Format Operating Procedures

| KEY DEPRESSED | DISPLAY PRESENTATION |
|---|---|
| a. ALTER FORMAT | Expanded lookahead display is replaced by an editing screen.<br><br>See display<br><br>Top line represents the current position of event pointers A through E. |

| KEY DEPRESSED | DISPLAY PRESENTATION |
|---|---|
| a. ALTER FORMAT (Cont'd.) | Reverse video points out which pointer will be first to play.<br><br>Below this line - EDIT line - change any entry that appears on the display. |
| b. ADV | Depressed as many times as required to place the cursor to the desired column. |
| c. 4-digit event number | Data is displayed as typed and cursor moves to the next column. |
| d. ALTER FORMAT | Confirms change; edit display is replaced by the normal operate display. |

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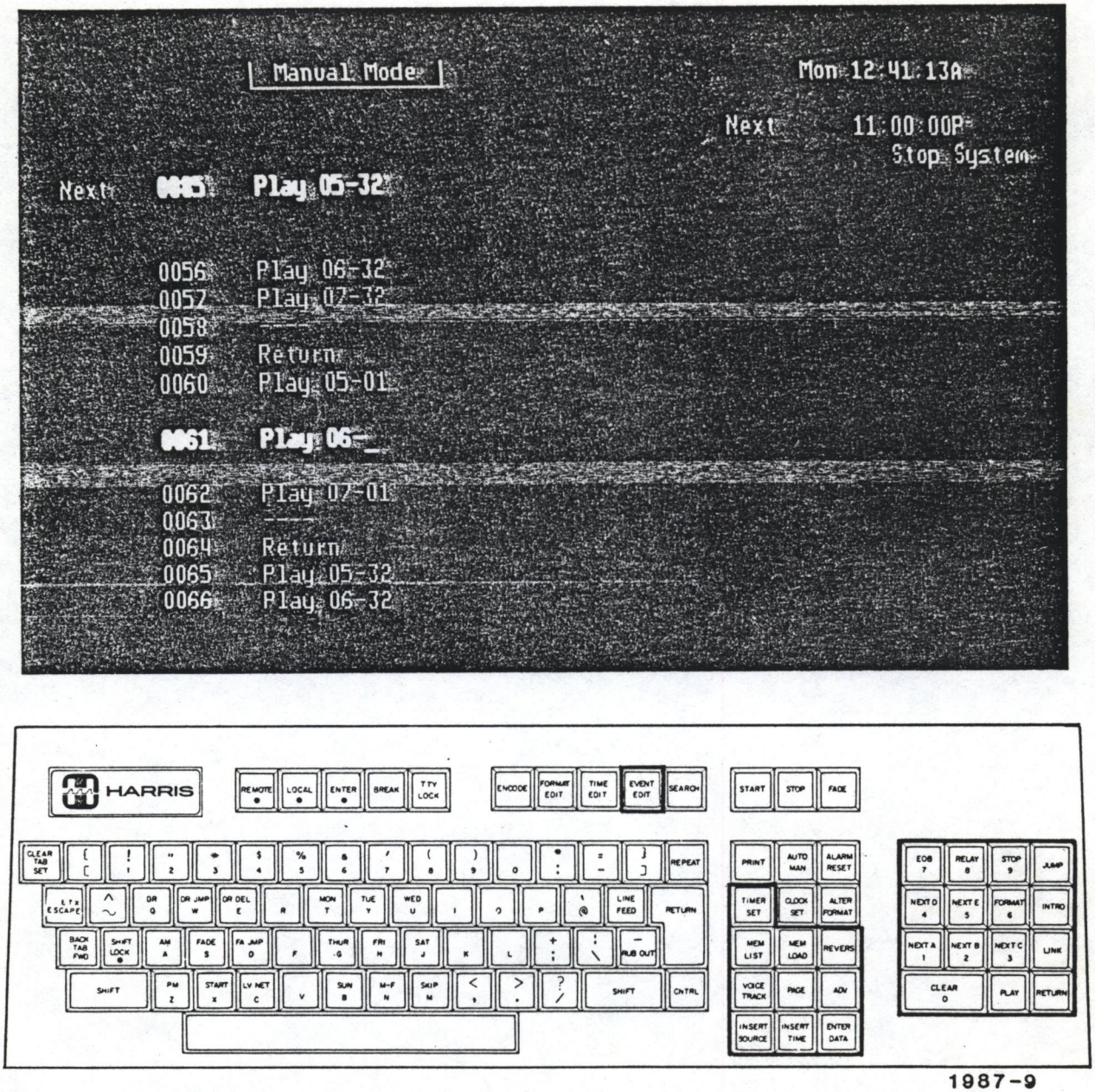


1987-9

Event Edit Keys and Display

2-17. EVENT EDIT

2-18. The Event Edit keys are used as follows:

a. To start from a specific event

1. Depress EVENT EDIT.

2. Enter the 4-digit event number.





WARNING: Disconnect primary power prior to servicing.

b. To start from the NEXT event

1. Depress EVENT EDIT.

2. Depress ADV.

c. To start from the previous editing session

1. Depress EVENT EDIT.

2. Depress REV.

d. ENTER DATA

1. Depress this key to change the bright entry or to restart any entry.

e. ADV and REV

1. Moves display up or down.

2. When held depressed for one second or longer, the bright display moves rapidly up or down past 30 events each second and the entire display will update when the key is released.

f. CLEAR

1. Erases the bright entry from memory.

g. Commands that require numeric entry (depress ENTER DATA first)

1. PLAY, LINK, and INTRO require a 2-digit source number and as a dash appears following source entry, a 2-digit shelf number.

2. JUMP requires a 4-digit event number (0001 to maximum event number).

3. Timer requires a 4-digit entry of minutes and seconds (up to 59:59).

4. FORMAT requires a 2-digit number (01 to 64).

5. RELAY requires a 2-digit number (01 to 08).

h. Commands that do not require a numeric entry

1. NEXT A, NEXT B, NEXT C, NEXT D, NEXT E, EOB (end-of-block), STOP, RETURN, VOICE TRACK, and MEMORY LOAD (remote load). These commands are complete entries once these keys are depressed.

i. Error Messages

1. If COMMAND NOT UNDERSTOOD appears; system expected a valid command.

2. If DIGIT NOT UNDERSTOOD appears; system expected a digit from 0 through 9 only.

3. If ENTRY NOT UNDERSTOOD appears; the numeric part of entry invalid.

4. If NOT AN AVAILABLE SOURCE appears; an attempt to enter a nonexistent source was made.

5. If NOT AN AVAILABLE EVENT appears; the event entry was outside the range of usable events in the system.

6. If SHELF ENTRY NOT UNDERSTOOD appears; the shelf data is outside the number of locations for a particular random access machine.

j. Ending the Editing Session

1. Begin some other editing mode.

2. Depress AUTO/MAN key if no other editing is desired.

3. The system will remember the event number in the center of the display for future reference.

Event Edit Operating Procedures

| KEY DEPRESSED | DISPLAY PRESENTATION |
|---|---|
| a. EVENT EDIT | Editing portion of screen is cleared. |
| b. Enter desired event (4 digits) | Appears bright on screen.<br>NOTE<br>Step b. is starting from a specific event. To start from the previous editing session, depress the REV key; to start from the next event, depress the ADV key. |
| c. ENTER DATA | Cursor appears at the event number selected. |

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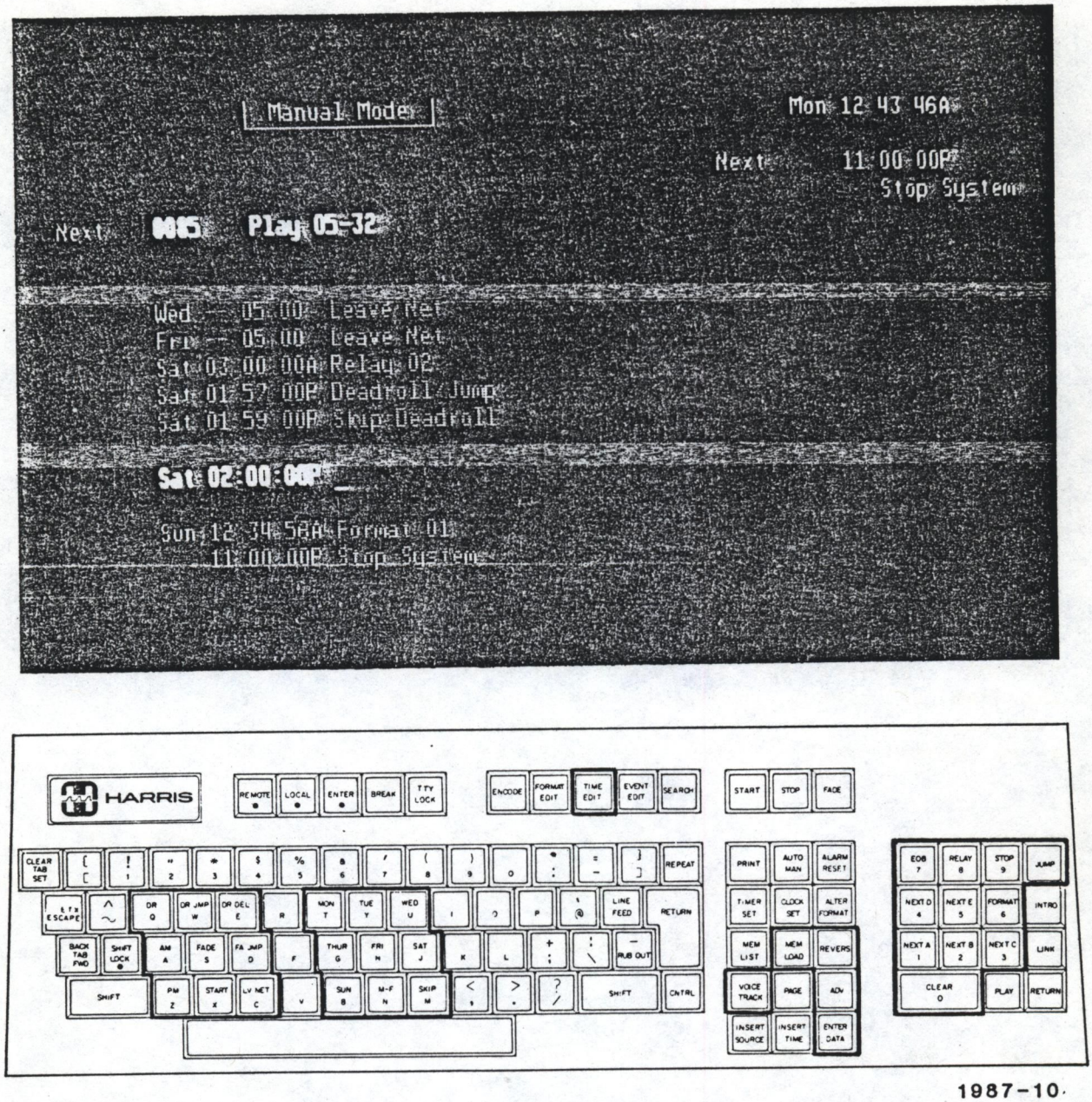


1987-10

Time Edit Keys and Display

2-19. TIME EDIT

2-20. The Time Edit keys are used as follows:

a. To start from a specific time

1. Depress TIME EDIT

2. Enter the desired day (or day group) followed by hours (or SKIP), minutes, seconds, and AM or PM.





WARNING: Disconnect primary power prior to servicing.

b. To start from the first entry

1. Depress TIME EDIT.

2. Depress ADV.

c. To start from the most recently entered entry

1. Depress TIME EDIT.

2. Depress REV.

d. ENTER DATA

1. Same action as depressing TIME EDIT (use options above).

e. ADV and REV

1. Permits operator to position any entry in the center of the display for editing or review.

f. CLEAR

1. Erases the entry from the center of the display. Another entry will assume its position unless memory is emptied. Holding the CLEAR key depressed for more than one second permits clearing entries from the Compare Time memory at a thirty-per-second rate.

g. Commands that require a numeric entry.

1. RELAY requires a 2-digit number (01 to 08).

2. FORMAT requires a 2-digit number (01 to 64).

h. Error Messages

1. If COMMAND NOT UNDERSTOOD appears; system expected a valid command.

2. If DIGIT NOT UNDERSTOOD appears; system expected a digit from 0 through 9 only.

3. If WHAT DAY appears; system expected an entry for a day or day group.

4. If AM or PM appears; system expected an entry for AM or PM code.

5. If ENTRY NOT UNDERSTOOD appears; the numeric part of the entry is invalid.

i. Ending the Editing Session

1. Begin some other editing mode.

2. Depress AUTO/MAN if no further editing is desired.

3. The system will remember the time entry in the center of the display for future reference.

Time Edit Operating Procedures

| KEY DEPRESSED | DISPLAY PRESENTATION |
|---|---|
| a. TIME EDIT | Editing portion of screen is cleared. |
| b. Enter time desired. | Time appears as typed.<br><br>Screen appears as shown when time portion of entry is complete.<br><br>Cursor remains until function is entered.<br><br>NOTE<br><br>See section V for details on use of Time Functions and the Compare Time Memory. |

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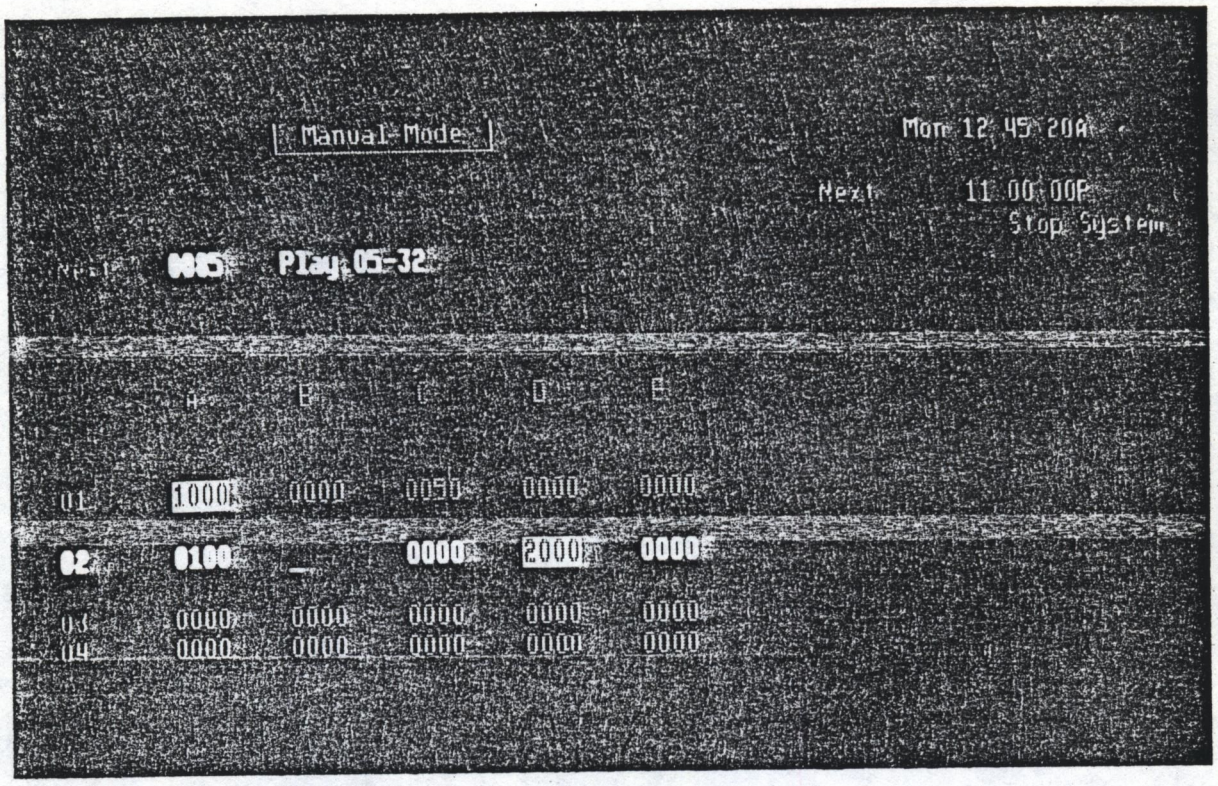
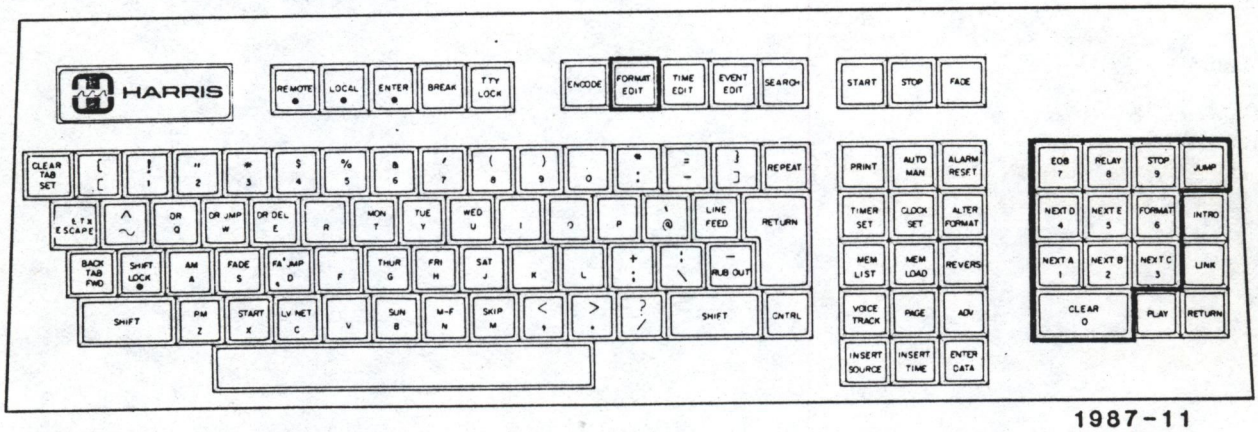



1987-11

Format Edit Keys and Display

2-21. FORMAT EDIT

2-22. The Format Edit keys are used as follows:

a. To start from a specific format

1. Depress FORMAT EDIT.

2. Enter the 2-digit number (01 to 64).





WARNING: Disconnect primary power prior to servicing.

b. To start from the beginning of the format memory

1. Depress FORMAT EDIT

2. Depress ADV.

c. To start from the most recent entry

1. Depress FORMAT EDIT.

2. Depress REV.

d. ENTER DATA

1. Depress the key to begin the entry on the center of the display.

2. Depress the key to restart any entry in progress.

e. ADV and REV

1. Move the display up or down.

f. Advance and Reverse within a Format

1. Moves the editing cursor left and right. When moved past either end, the entire display begins moving up or down.

g. JUMP

1. Depress key before event entry if system is to begin playing from a specified file when this format instruction is executed.

2. The editing cursor will change to reverse video.

3. Upon completion of the event entry, any other such JUMP entry will be altered to a Non-Jump entry.

h. Error Messages

1. If COMMAND NOT UNDERSTOOD appears; system expected a valid command.

2. If DIGIT NOT UNDERSTOOD appears; system expected a digit from 0 through 9 only.

3. If NOT AN AVAILABLE EVENT appears; the event entered is out of range of usuable events.

i. Ending the Editing Session

1. Begin some other editing mode.

2. Depress AUTO/MAN if no further editing is desired.

3. The system will remember the format in the center of the display for future reference.

Format Edit Operating Procedures

| KEY DEPRESSED | DISPLAY PRESENTATION |
|---|---|
| a. FORMAT EDIT | Edit portion of screen is cleared. |
| (Enter desired format as two digits) | Data appears as typed.<br><br>Display appears as shown after second digit entered. |
| b. ENTER DATA | Cursor appears. |
| (Using ADV and REV keys, position cursor and edit displayed data) | Data displayed as entered.<br><br>NOTE<br><br>See Section V for details on use of the Format Memory. |

SECTION III

OPERATION

## 3-1. SYSTEM TURN-ON PROCEDURES

3-2. Perform the power-up procedures as follows:

a. Emergency panel switch to NORMAL.

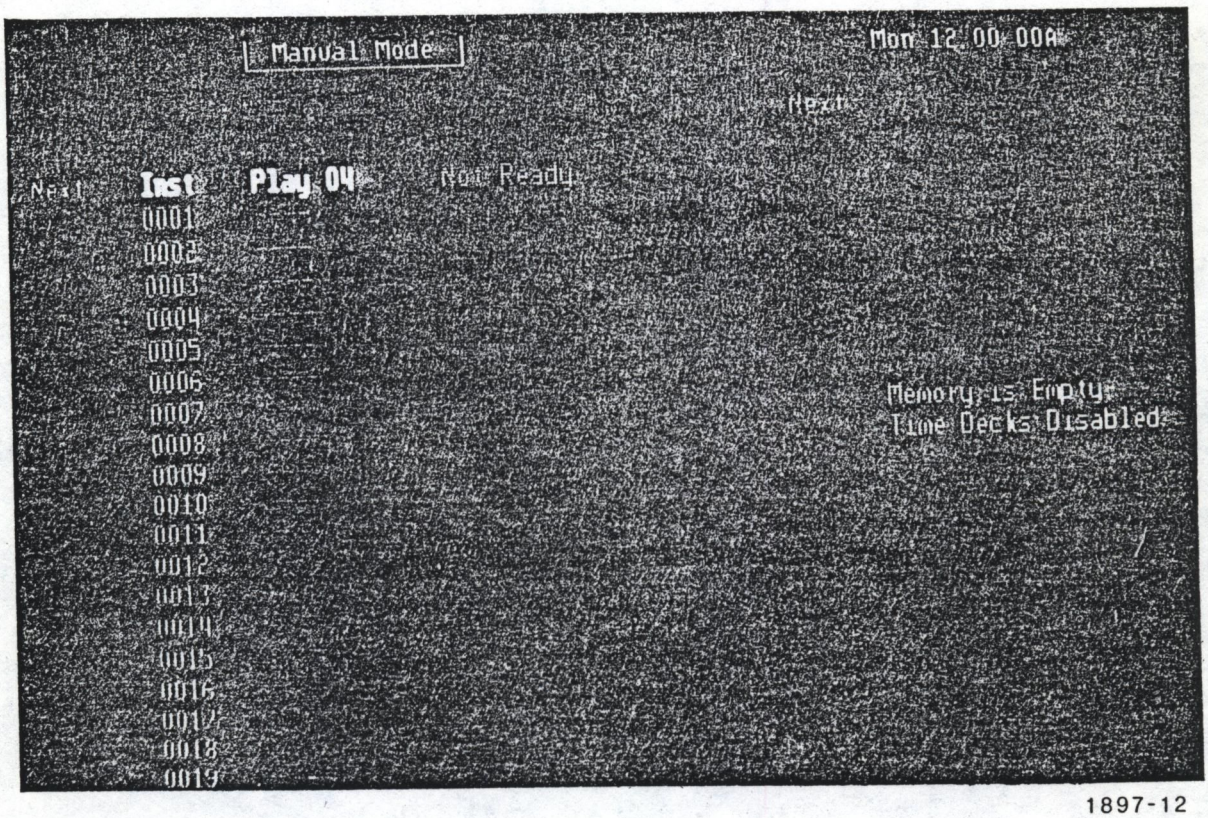
b. Depress CRT terminal POWER SWITCH to ON; allow a 1 minute warm-up period.

c. Position Power Panel POWER ON/OFF switch to ON; verify that the POWER SUPPLY indicator is illuminated.

d. Verify the indications on power-up as follows:

1. CRT display should blank, then present initial display of Monday at Midnight, with alarm MEMORY IS EMPTY message.

2. The Fill deck will be NEXT TO PLAY, as an inserted source.




1897-12

Display on Power Up





WARNING: Disconnect primary power prior to servicing.

3. Random access machines, even if in AUTO mode, should remain idle at any location.

4. The clock should be running.

5. The Look-ahead Display should present events 0001 to 0019, each of which is empty (----).

e. Inspect Memory via CRT as follows:

1. Depress EVENT EDIT and attempt to enter 9999, if unable to enter 9999, try 5999, then 1999.

2. When highest event number is found, depress ENTER DATA key.

3. Depress PLAY key.

4. Enter the 2-digit number of the inserted source that is displayed as NEXT.

5. Depress EVENT EDIT key.

6. Depress ADV key.

7. Depress ENTER DATA key; enter the same PLAY instruction as in step e.4.

8. Depress AUTO/MAN key; the display should restore the Look-ahead Display.

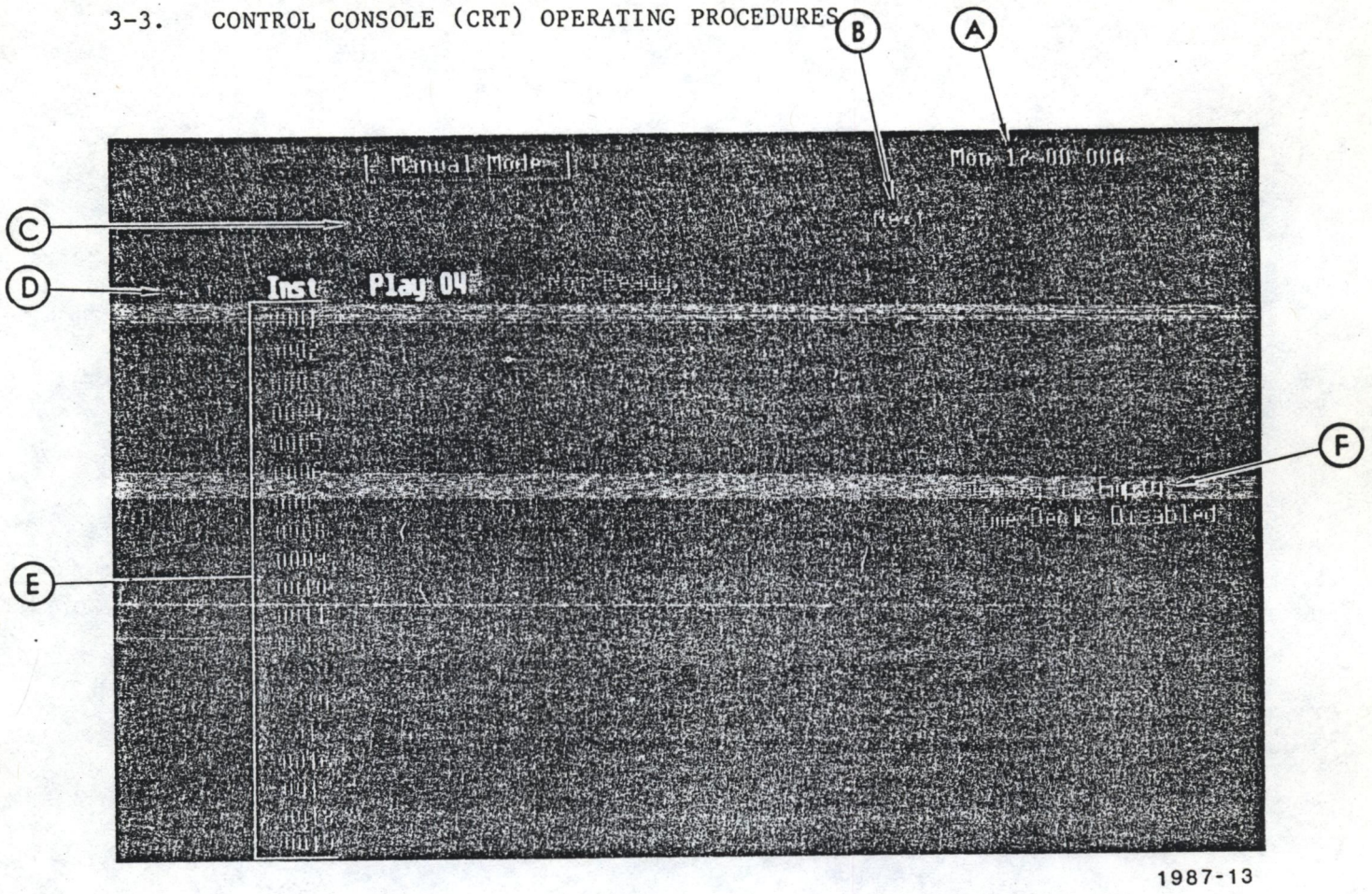
9. Verify that the system is displaying MANUAL MODE; if not, depress the AUTO/MAN key.

10. Depress ADV key; event 0001 should appear in the NEXT display.

11. Depress ADV key; the last available event should now be Next.

12. In getting from event 0001 to the last event in Memory verifies that all the events between are blank since the system had to read all the events in getting to the last event.

3-3. CONTROL CONSOLE (CRT) OPERATING PROCEDURES




Operate Display

3-4. The OPERATE display indications are as follows:

a. Real-Time Clock

1. Dim when running; bright during CLOCK SET.

2. Option for 24-hour time display.

b. Next Time Instruction

1. Dim when displaying entry from memory; bright when displaying an insert or during entry of an insert.

2. Option for 24-hour display format.

c. On-Air Event and Status

1. Displays what is playing and where the instruction came from (event number, Inst., Fill, etc).

2. Display disappears if source goes off the air and nothing is playing in the audio switcher.

d. Next Event and Status

1. Displays what is next and where the instruction came from.

2. NOT READY warning displayed if next source is not ready. This is continually monitored for the source which is next.

e. Look-ahead Display

1. Displays 19 events beyond NEXT.

2. Programmable Display - Normally, nonplaying events are dim. Operator can redefine highlighted events.

3. All subroutines and subroutine instructions are displayed and merged as they will actually occur.

f. Alarm Display

1. Memory is Empty - on power-up.

2. Power has been Off - on power recovery.

3. Time Decks Disabled - on power recovery if time announce decks are present.

4. Transmitter Silence - when it occurs.

5. Program Silence - when it occurs.

6. Program Loop Escape - when it occurs.

7. Non-Ready Sources - when they occur.

8. Logging Failure - when it occurs.

3-5. DUAL CRT OPERATING PROCEDURES

3-6. In a dual CRT configuration, one terminal is designated the control terminal and the second CRT is the editing terminal. The difference between the two is that only the control terminal has the capability to manually operate the system. The start, stop, fade, advance, insert source, insert time, and alter format keys are inhibited on the editing terminal to prevent any conflict in manual control. If control is attempted at the editing terminal, a "Use Other Terminal" will appear on the CRT.

3-7. Either terminal can perform editing independently. Editing of the Event or Format may be done simultaneously in any combination. With certain limitations, other modes are available from either terminal. Either, but

not both, terminals may use the encode facility (if installed) or set the clock time, edit the compare time memory, and use the 9002 Virtual Utilities (if installed). If one of the terminals is in the process of performing one of these functions when the other terminal tries to do the same function, a "Facility Already In Use" will appear on the CRT. Each terminal has independent operate display highlighting. The countdown timer, the alarms, and the ready display appear only on the control terminal.

3-8. EMERGENCY MODE OPERATING PROCEDURES

3-9. To use Control Logic II in the EMERGENCY mode, set the emergency normal switch to the right (looking at the front edge of the board); the emergency controls are now enabled. The emergency source can be selected by using the top two switches. Any source number between 1 and 32 may be dialed into the switches. Source numbers beyond 32 and source 00 are automatically inhibited by the emergency source select code converter on the pc board.

3-10. The emergency shelf may be selected by the second set of switches labeled EMERGENCY SHELF. Any number between 00 and 99 can be dialed into the switches and loaded into the shelf number for the random access source switches, depress the emergency LOAD pushbutton which is the bottom switch on the board. This loads the number into the random access shelf driver unit. After the desired source and shelf have been selected, the source may be started by depressing the START pushbutton on the printed-circuit board. This will cause the selected emergency source to be started and placed on the air and also remove any previously running source from the air.

3-11. If there is a source on the air, it can be stopped by depressing the EMERGENCY STOP pushbutton. This will remove any source or sources that may be running at the time. If it is not desired to come to an abrupt stop by depressing the EMERGENCY STOP pushbutton, the fade out can be used by depressing the EMERGENCY FADE pushbutton, the on-air source will be faded out and the audio terminated at the end of the fade cycle. This can be used in place of the EMERGENCY STOP pushbutton to fade out of one source and then start the next source with the EMERGENCY START pushbutton. The emergency mode is intended for emergency operations and cases where the computer has malfunctioned and is in the process of being repaired or waiting on repairs; it is not intended for use as an operational console to the system, but provides a means to allow the system to be manually operated.

3-12. POWER FAIL OPERATING PROCEDURES

3-13. To take advantage of the Power Fail option of the Program Control, an external battery and battery charger must be connected to the Power Supply.

3-14. For power failures of less than 30 seconds duration, the source that was on-air when the failure occurred will be restarted when power returns. For failures of more than 30 seconds, but less than 2.5 minutes, the system will recue the last source played and start the next programmed source when power returns. For power failures of more than 2.5 minutes duration, the system will recue the last source played and place the fill deck on-air and

turn on the alarm when power returns. The fill deck will play until completion, at which time the next scheduled event is placed on-air. All power failures will cause the alarm to be turned on and will place the Time Announce machines in the not ready state. It is necessary for the operator to depress the ALARM RESET key to turn off the alarm. It is also necessary for the operator to cue up the Time Announcements to synchronize with the Read Time display and depress the SET TIME key twice. Some types of random access sources may tray out when power returns, thereby placing them in the not ready state if they are next to play at power return.

3-15. A diagnostic character V is printed on the log for the event on-air at the time of power failure. If the system is in the manual mode at the time of failure, the V will be printed on the log when power returns and the next source select is updated (not advanced).

3-16. If the system is in the AUTO mode when a power failure occurs, all time corrections will continue to update the program to ensure a proper restart when power returns.

## 3-17. SYSTEM OPERATING PROCEDURES

3-18. After power has been applied, and no other activity is in progress, the operator sees a display of system real-time and a preview of the next 20 events to execute.

3-19. The CRT display is dual-intensity. Usually, events which will play on the air are bright, while events containing instructions affecting the execution of on-air events will be displayed at a reduced intensity. This relationship may be changed to highlight specific event and instruction file areas, and supplemented with a bar graph, displaying the relationship of the active program event sequence.

3-20. There is also an area of the display dedicated to alarm messages. If something goes wrong, the system can alert the user with its external alarm equipment and provide the details needed via the CRT display.

3-21. Full-function remote control facilities are available at the CRT keyboard. The operator can start, stop, fade out, or insert event material. The operator can control the Start/Overlap of the system while starting a new machine by holding the START key depressed. Outgoing audio will stay on the air until the key is released.

3-22. The next active Compare Time instruction is also displayed. The keyboard permits inserting a one-time Compare Time instruction, which is identified as a bright display, while regular instructions are displayed at the reduced intensity.

## 3-23. SYSTEM MONITORING

3-24. Monitoring of the audio signals is accomplished from the Monitor Panel on the Program Controller assembly. The VU meter, audio level control, and the single channel monitor amplifier on the panel provide

monitoring for either stereo or monaural audio from one of four inputs. These inputs include the program output, the input from the audition bus, and one external input. Each of the three inputs can be monitored for left channel audio, right channel audio, sum audio (combined left plus right), and null combination (combined left minus right). The latter is used when making stereo phase adjustments.

3-25. The LEVEL meter is also used with the AUDIT pushbutton depressed to make source level adjustments, and to check the 25 Hz tone levels from the reel-to-reel sources.

3-26. EDITING FEATURES

3-27. There are several things an operator might want to do while the system is running, and some of them involve editing some portion of the system's "brain". Usually, this involves a specialized editing display which occupies a portion of the CRT screen. Such editing modes include:

a. A CLOCK SET mode for changing the real-time clock.

b. An ALTER FORMAT mode for observation or changing of the five program counters in use on the air. The user can reposition the music rotation, or spot rotation, or news sequence. While it is being used on the air, he can place a different pointer on the air next if he wishes, in which case the sequence will be altered as the overall rotation continues from there.

c. An EVENT EDIT mode which allows the operator to review or make changes in any of up to 9999 events. He further has the option to begin this editing session from the point he was last editing, or from the Next To Play event, or any specific event he wishes to enter. Further, the display shows him a "window" or memory above and below the entry being edited, which can be positioned up or down using the ADV (Advance) or REV (Reverse) keys. If neither key is held, the display will scroll at about 30 entries per second.

d. A TIME EDIT mode for reviewing or changing the time instructions in the memory. The operation and display are similar to the event edit mode. The time entries are ordered chronologically in the memory, beginning with Monday entries, regardless of the order of entry.

e. A FORMAT EDIT mode is similar in operation and display to the edit modes. With this mode, the operator may set up any or all of the five program counters to any combination of events needed to start system opereation. typically, such entries are used for event positioning prior to sign on, or form format changes for day-parting the music rotation, and for special programs. Any such entry is given a FORMAT number. Any use by the system of this format number sets up the desired program counters automatically. A good example of this use is prior to sign on when the

system is stopped, but otherwise in an unknown condition. Use of one format instruction activated by a compare time entry, makes certain the system will sign on with the proper event sequence.

3-28. EXECUTION

3-29. The system uses the event memory on the air. Up to five different event areas may be in use at the same time. Their locations and uses are at the user's discretion. Assume there is a memory pointer for each of these areas, and each pointer is given a letter for a name, from A to E. The user can position these program counters any place automatically, by use of a format instruction or immediately by use of the ALTER FORMAT mode. Any of these five pointers can be used as the starting point. The event it is pointing to becomes the start of the on-air sequence. In this sequence, an event may make reference to the name of one of the other pointers. On-air execution then changes to the event area associated with that pointer. Control can pass back and forth indefinitely in this manner with an event in any event area calling on one of the other areas. The system has the ability to back-track to the last eight areas used by using the RETURN instruction. This permits a scheme (nesting) in which a group of events in one event area may be called upon, at any time, by an event at any location in another event area with control returning to the previous event area. Nesting can be eight levels deep.

3-30. All of this permits the user to set up independent rotations for different types of material and lets any rotation call on any other in any order, without the necessity of entering the specific event numbers. This allows rotations such as play lists to be used.

3-31. Day-parting is dramatically simplified by allowing the user to enter several music rotations in different memory areas, and by format instruction, change just the music without affecting anything else.

3-32. Control may be shifted to another event area by a time-related instruction in the same way that is can be transferred by an event. As with the event transfer of control to another event area, multiple Time Insertion of event areas will be handled on a first-in, last-out (FIFO) basis (nesting). Time Insertion of an event area will wait for critical event combinations to finish if there are some which should not be interrupted.

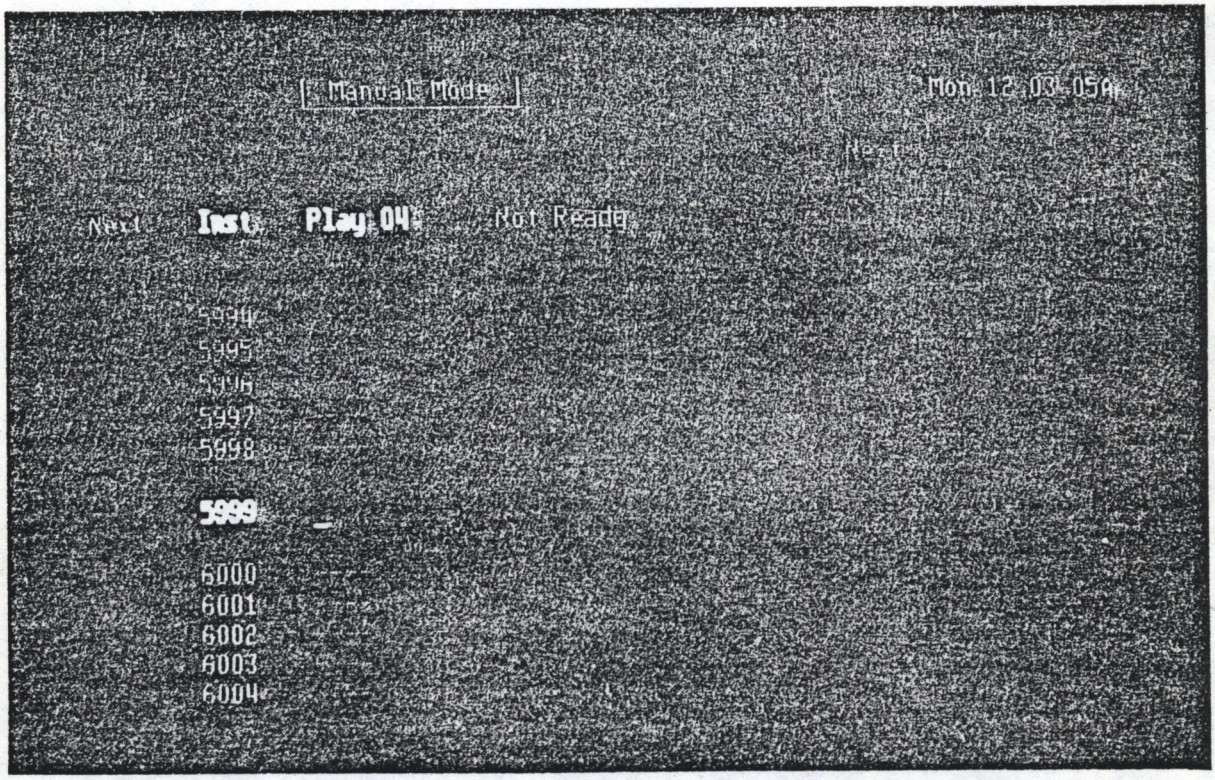
3-33. Time correction programming involves the use of the Jump and End-of-Block (EOB) instruction. This event entry (End-of-Block) serves as a marker for the on-air sequence in two ways. If the system has been overprogrammed (the usual case), a Time Correction time entry (JUMP) will cause event execution to change to the first programmed event beyond that point. The system justifies all subroutines not yet played, no matter what the order, so that the relationship is proper before starting the new time period. In other words, execution of a Time correction time entry in an overprogrammed situation acts as if the entire sequence of events that would have played (if there were no Time Correction) had been rapidly passed over, one at a time.

3-34. The second function that the End-of-Block instruction allows is underprogramming. When underprogramming, the system will hold the last playable entry for replay as many times as needed when the system is at the End-of-Block. The next block will start at the time correction point. This method allows a repeating fill deck to play as needed in the event that the segment runs short. The system cannot run ahead of schedule or get into the next block early, which might prove disastrous because the time correction would then cause the system to find the beginning of still one further block and remain one segment off until discovered and corrected.

3-35. The menu of available time instructions relates to starting and stopping the system, time insertions and time corrections, dead rolls, fades (and other net join type instructions), format instructions and external relay output functions.

3-36. The requirement for such entries has been minimized by allowing categorization of entries for specific days, entries for every day or weekdays only. Entry is reduced if functions are to occur on every hour of the above categories.

3-37. TYPICAL EDITING DISPLAY




Typical Editing Display

3-38. A description of an editing display is as follows:

a. Editing Area

1. Replaces extended look-ahead display, but allows On-Air and Next information to remain on screen while editing.

2. All real-time status and next status will continue to update during editing.

3. The line to be edited is highlighted by bright characters while a suitable area of entries above and below will be displayed in dim characters to help the operator to see the editing in better context.

4. A cursor will identify the area in which the next data will be entered during editing.

5. The line to be edited may be changed by using the ADV (Advance) and REV (Reverse) pushbuttons. If either pushbutton is held depressed, the Advance or Reverse action will continue at about a thirty-per-second rate.

b. Prompting Area

1. Briefly displays a warning or suggestion to the operator in case of entry error. The display disappears in a few seconds and no keys need be depressed to restart the entry.

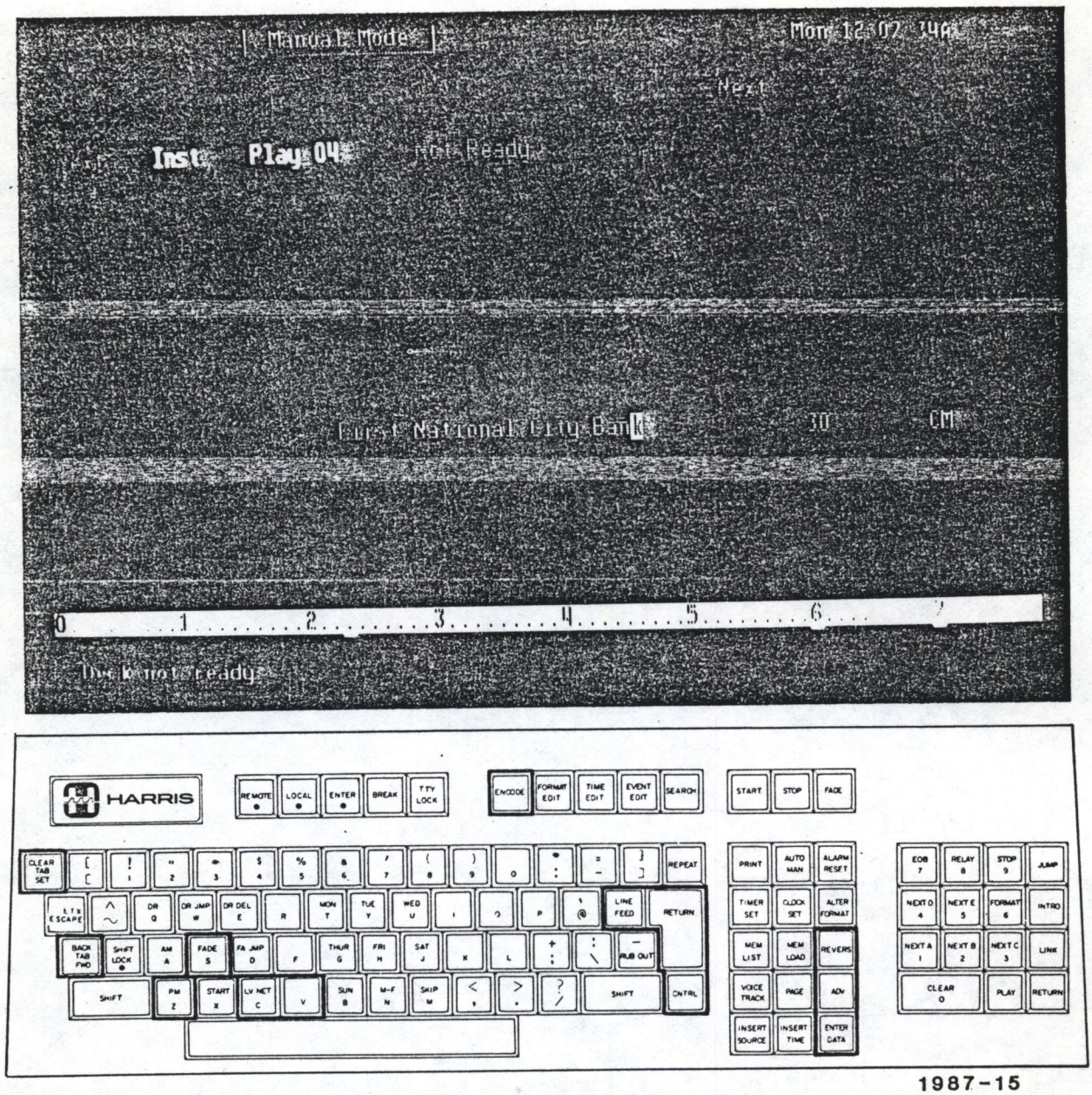
3-39. MODEL 9001 LOGGING/ENCODING OPERATING PROCEDURES

3-40. The purpose of the logging subsystem is to provide printed verification of material aired or scheduled to be aired by the system. In the absence of any encoded (recorded) information, the system will produce a printed line for each scheduled event, advancing the printer to a new line upon termination of that event. The printed output includes the Starting Time, the Event number or other indication of where the instruction originated, the Source and Shelf numbers, and a diagnostic character which may be printed at the left margin to indicate any unusual circumstance regarding the airing of that event. To the right of the Source and Shelf numbers is space for encoded data. This will be where the user information appears. The encoded data may be of any length. It can cause the printer to output as many lines of description as desired. The following example shows a typical logging printout.

```
F  12:34:56A  0123  02-34 FIRST NATIONAL SAVINGS
   12:34:59A  INST 12
*  12:35:18A  INST 02-34
   12:35:18A  0124  03-45 ECONOMY RENT A CAR
```

3-41. As shown in the example, the system generates 23 characters of data upon starting any event. When printing, it initially skips over the diagnostic code. The encoded data, if present, normally prints a few seconds after the system-generated data. Upon termination of that event the printer will be directed back to the first column of the same line where it can print its diagnostic before going to the next line. As shown, event 0123 started at 12:34:56 AM, played cartridge 02-34 which identified itself as "FIRST NATIONAL SAVINGS", but the event was immediately faded out by the operator. This is indicated by the diagnostic F. The operator inserted source 12 (with no encoded data), and it played next. This is typical of live sources and reel tapes. At the end of the inserted material, the system attempted to play cartridge 02-34. The diagnostic * signifies that at 12:35:18 AM the cartridge was not ready. The system printed out what was scheduled before moving to the next line to show what played in its place. In this case, the next event; source 03, shelf 45, an announcement for a car rental agency.

3-42. Often the printing of the log may lag behind the actual on-air execution by several seconds. In the event of a paper jam or out-of paper condition, several minutes may elapse. For this reason the logging subsystem includes 1024 characters of buffer storage for data intended for print. Encoded data as well as system data is stored. This affords considerable latitude in the speed and type of printer used. Thus the rate at which characters appear on the recorded tape has little effect on the speed at which those characters will actually be printed.




1987-15

Encoder Keyboard and Display

3-43. ENCODING

3-44. When the logging subsystem is installed, encoding takes place using the CRT entry terminal and a cartridge recorder. The two need not be close together although proximity may be helpful.

3-45. PREPARING THE MESSAGE

3-46. Depress the ENCODE key on the keyboard. The resulting display will be the most recent message created by the encoding system, potentially up to six lines, beneath which is a column counter with tab stops indicated by bright bars. Under the column counter will appear the status of the encoding deck; to the right will appear any prompting message in the event any difficulty is encountered.

3-47. EDITING

3-48. Depress the ENTER DATA key to begin any editing of the message in the encoding buffer. A reverse video block cursor will appear at the position known as HOME. This position, 23 characters from the beginning of the first line (10 characters on Model 9003), corresponds to the location where encoding will be printed on the log. Note that a tab stop always appears at this column. The remaining five lines begin at the left margin as they will appear when printed on the log. The intent of the initial tap stop is to provide an easy way to indent to the same column as the top line on multiple line messages. If the cursor is present, typing any character simply replaces the character at the cursor position. The cursor and keyboard function in a manner similar to a typewriter. Keys that may be used to manipulate the cursor are as follows:

a. ADV (Advance) - moves cursor to the right.

b. REV (Reverse) - moves cursor to the left.

c. ENTER DATA - moves cursor HOME.

d. LINE FEED - moves cursor down, or from bottom to top line.

e. RETURN - moves cursor to start of next line, or HOME from the bottom line.

f. TAB - moves cursor to next tab stop, or right margin.

3-49. In addition, typing a CONTROL/C causes the system to perform a "Clear to end of buffer" function. All text below and right of the cursor will disappear. By using the typewriter keyboard and the keys mentioned above, any text to be encoded can be prepared. There is no particular order in which the data must be typed, nor is it necessary to type any character to indicate the end of the message.

3-50. ENCODING A CARTRIDGE

3-51. Once the message has been prepared, insert the intended cartridge into the encoding deck and observe that the CRT display indicates its readiness. Typing a CONTROL/Z will begin the encoding process. The editing display will disappear and the encoding deck will start. The deck status will indicate the deck running. All further data entry will be locked out. Approximately one second later, the message (the demodulated data played back

on the encode deck) will begin to reappear on the display. This provides visual verification of the recording process. If it is unnecessary to observe the verification, leave the encode mode after having started the deck; however, it will be impossible to begin preparing any new message until after the recording is complete.

3-52. VERIFICATION OF AN EXISTING ENCODED MESSAGE

3-53. Typing a CONTROL/V will cause the system to perform as if it were encoding a cartridge, except that no recording is produced. This allows a display of any message on a previously encoded cartridge.

3-54. STOPPING THE ENCODE DECK

3-55. To stop the encode deck, type CONTROL/S. This may be useful should the deck to some distance from the CRT terminal. When preparing messages that exceed six lines in length requires stopping the deck and encoding the remaining lines in separate passes.

3-56. SETTING AND CLEARING TAB STOPS

3-57. User information occasionally tends towards a columnar format, particularly if the type and length of the announcement is part of the encoded message. Settable tab stops will help to make such columns consistent since it will then be unnecessary for the operator preparing the message to count an exact number of columns or spaces. To set a tab stop, move the cursor to the desired column and depress the TAB SET key; to clear a tab stop, position the cursor and depress the TAB SET key with the SHIFT key held down.

3-58. VERIFICATION OF MESSAGES WHICH EXCEED SIX LINES

3-59. If an encoded cartridge exceeds six lines, the subsequent lines will wrap around to the top of the encode display area. This circular motion will continue until the end of the message. Typing a CONTROL/V while verification is in progress will erase the display.

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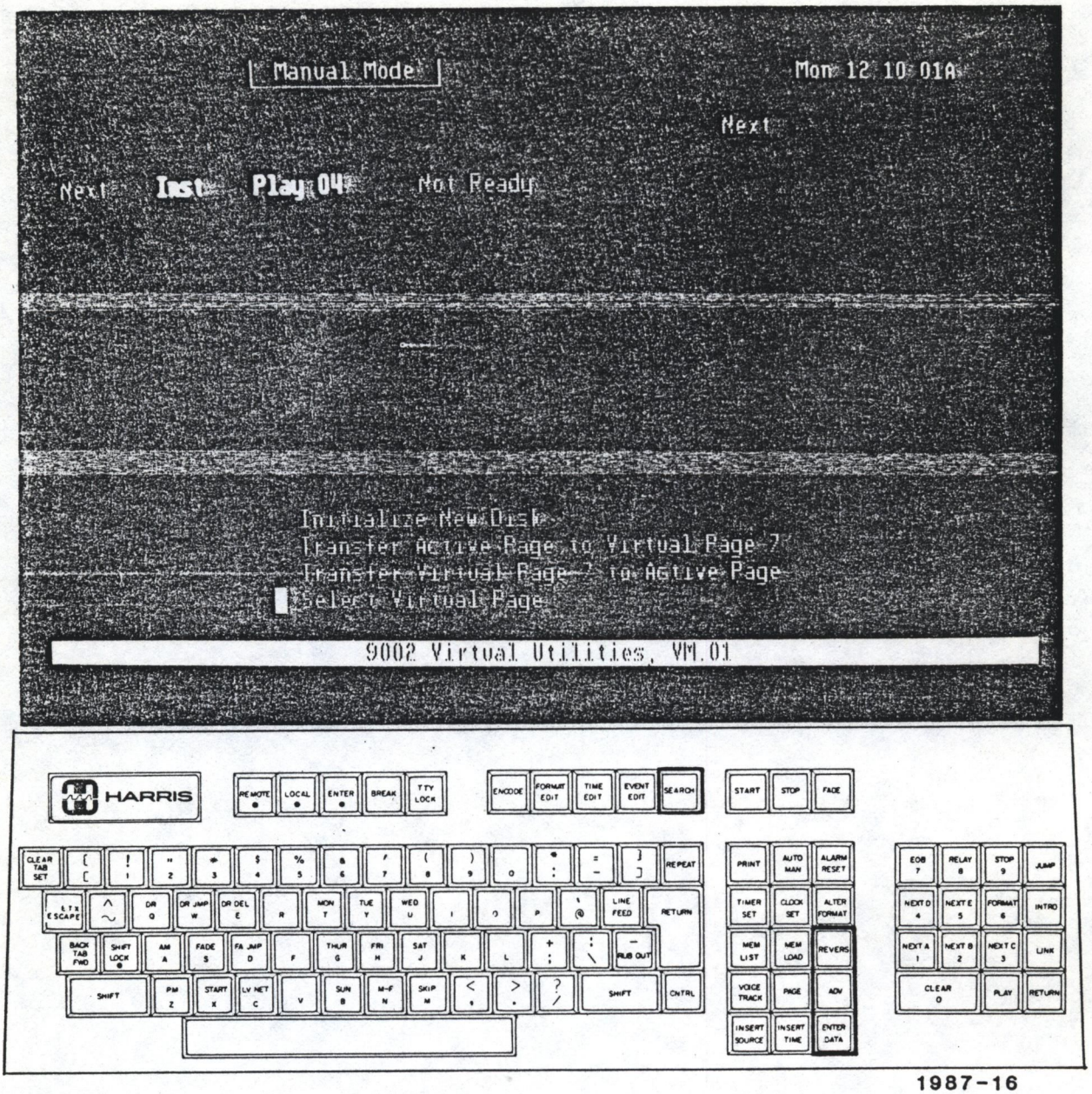


1987-16

9002 Virtual Utilities Keyboard and Display

3-60. VIRTUAL UTILITIES MODE

3-61. When operating in the virtual mode (VIRTUAL key depressed), the following selections are made available to the operator:

a. Initialize new disk

b. Transfer active page to virtual page (N)

c. Transfer virtual page (N) to active page





WARNING: Disconnect primary power prior to servicing.

d. Select Virtual page

When this display appears on the CRT, the cursor is moved (using the REV or ADV keys) to the desired function; then depress the ENTER DATA key to activate the function. At this time the selected function will appear bright on the CRT.

3-62. INITIALIZE NEW DISK. Before a blank diskette can be used to store virtual pages, it must be initialized. In performing this task, the space on the disk is organized into a compatible format and identifies the disk as a Model 9002 recording. If the disk is not identified in this manner, any attempt to transfer to or from the disk will fail and cause an error prompt (DISK ERROR--NOT VM FILE?) to appear on the CRT. This indicates that the disk does not belong in the disk drive and will also prevent the disk from being destroyed. If a rejected disk is to be made into a usable one, or to confirm that erasure of any existing material on the disk is desired, it must be initialized. The entire operation takes approximately one minute.

3-63. SELECT VIRTUAL PAGE. There are eight virtual pages on each diskette and each page is capable of storing 9999 events plus the entire compare time and format memory. These pages may be used to preserve a days programming (pages one through seven) while page zero can be used as a reserve. To select a virtual page, simply place the cursor at the SELECT VIRTUAL PAGE line; depress the ENTER DATA key; and enter a digit for the desired page (0 to 7).

3-64. When a virtual page (other than zero) has been selected, all subsequent editing at the terminal is affected. The event, compare time, and format edit modes will then make all displays and edits to and from the data on the disk. Selecting virtual page zero permits the operator to edit the active page, which is the on-the-air memory in use. Also, when power is first applied to the system, the equipment will examine the status of the disk drives. If a recording exists on virtual page zero at that time, it will be automatically loaded into the active page. Virtual page zero cannot be edited; however, it can be used as a maintenance aid.

NOTE

If a virtual page other than zero is selected, the virtual utilities mode will not be available to any other terminal until virtual page zero is selected or the terminal has remained idle for more than three minutes.

3-65. TRANSFER TO/FROM ACTIVE PAGE. These operations consist of copying of disk data into the on-air memory or from the on-air memory. This is the only way page zero can be used. The transfer on a 9999-event system takes approximately ten seconds.

## 3-66. MODEL 9003 SYSTEM OPERATING PROCEDURES

3-67. The Model 9003 PROGRAM CONTROL is a disk-based system. The 9002 ROM Memory provides support for the disk drive as well as routines used in system power-up. The remaining ROM-based code is not executed except where removal or repair of the disk drive becomes necessary. At that time the system will take on the characteristics of a Model 9002 system with 9999 events.

3-68. SYSTEM ACTIVATION

3-69. Activate the system as follows:

a. Insert a SYSTEM diskette into DRIVE 0.

b. Depress bar (part of the front of the drive); verify that the bar remains down. To remove a diskette, depress the bar again; lift the bar and the diskette will be ejected.

c. Open the door to the computer housing.

d. Depress BOOT pushbutton on the front of the CPU module; verify that the drive is engaged. If there is a loading problem, the CRT will display: ?BAD BOOT COPY?

e. If this error occurs, repeat steps a. through d.

NOTE

If unable to read the diskette, contact HARRIS CORPORATION, Broadcast Products Division.

f. If no loading problems occur, the initial operate display should appear on the CRT. If a test program in the Event, Format, and Compare Time Memory exists, it will appear as the first operate display.

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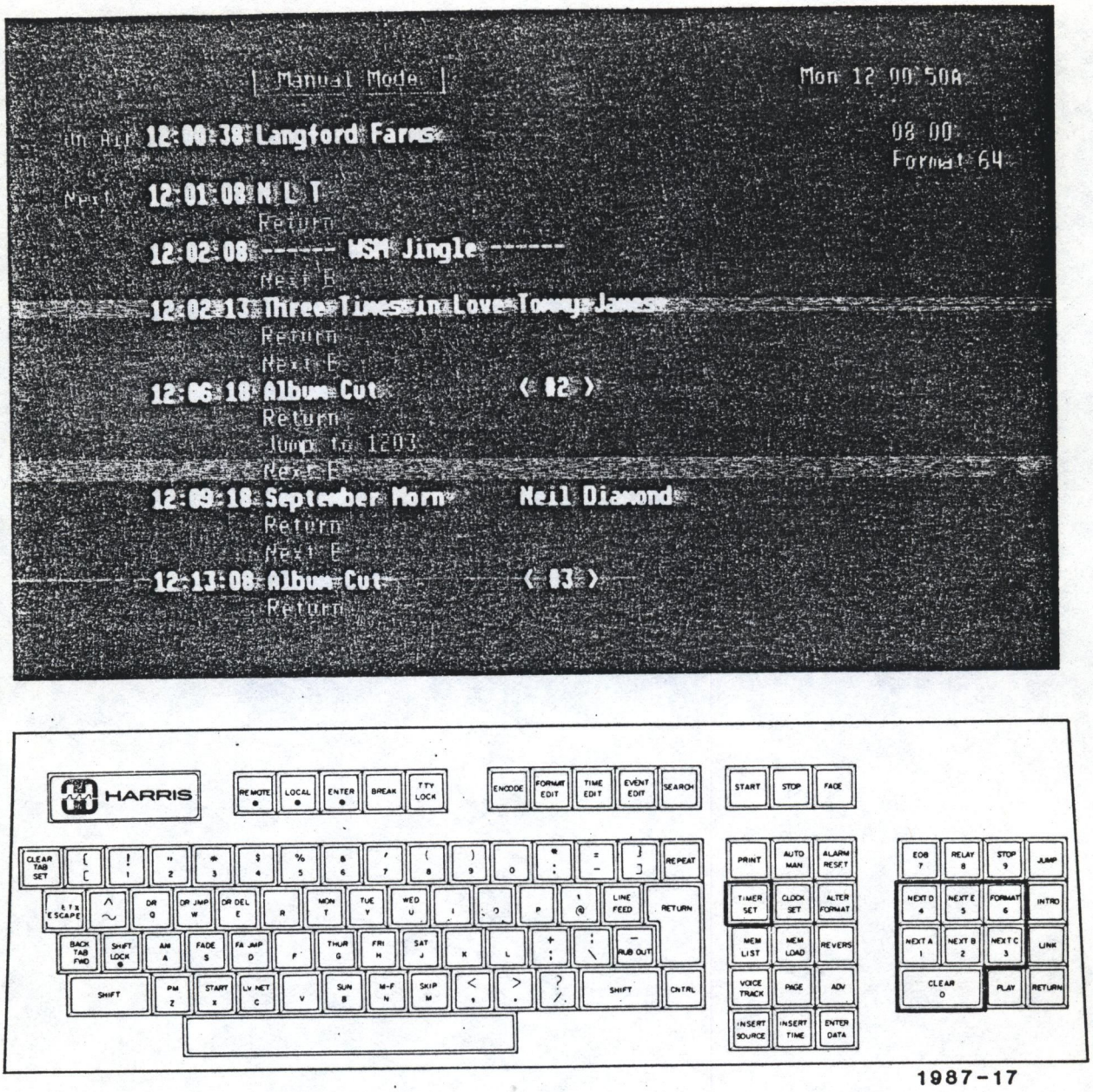


1987-17

9003 Operate Keyboard and Display

3-70. OPERATE DISPLAY

3-71. The display of upcoming events contains descriptions of upcoming material rather than source and shelf instructions only. In addition, it is possible to cause the display to show the approximate starting time for each of the displayed events.





WARNING: Disconnect primary power prior to servicing.

3-72. DISPLAY MODIFICATIONS

3-73. The Model 9003 display highlighting of memory files A through E is identical to the 9001 and 9002 models, including the bar graph. By depressing the TIMER SET key, the system will replace the displayed event numbers with the approximate starting time of the upcoming events. The accuracy of the times shown depends on the accuracy of the clock at the time the current event was put on-air, and the accuracy of the data entered in the title file. Generally, the accuracy should improve as the material moves up in the displayed list since the times are recomputed from the most recent starting time. Depressing the CLEAR key restores the event number display.

3-74. EDITING MODES

3-75. Most editing software is nonresident, that is, it is stored on the system diskette and retrieved for use. The memory space taken up by such an editing facility is general purpose and can be used by any editing mode. A slight delay will be noticed when entering any of the editing modes. Editing can begin when the expected prompt appears on the display.

3-76. CLOCK SET MODE

3-77. Refer to paragraph 2-9, Model 9001 Clock Set mode.

3-78. ENCODE MODE

3-79. Refer to paragraph 3-40, Model 9001 Encode Mode.

NOTE

The tab stop on the first line is to conform to the following logging output format and is exclusive with the Model 9003.

```
12:34:56A  SIR WALTER RALEIGH                    1234  0801  04-42 M
```

| | |
|---|---|
| 12:34:56A | Starting time |
| SIR WALTER RALEIGH | Program description |
| 1234 | Event number |
| 0801 | Account number |
| 04-42 | Source and tray |
| M | Diagnostic indicating the event was started manually |

3-80. FORMAT EDIT MODE

3-81. Refer to paragraph 2-19, Model 9001 Format Edit Mode.

3-82. TIME EDIT MODE

3-83. Refer to paragraph 2-17, Model 9001 Time Edit Mode.

3-84. EVENT EDIT MODE

3-85. Refer to paragraph 2-15, Model 9001 Time Edit Mode. Where the instructions refer to the event entries, the Play, Link, and Intro instructions are followed by Source and Shelf numbers. For the Model 9003, these instructions are followed by four-digit account numbers, and accounts from 0001 to 1999 may be entered; however, the account 1999 is reserved for the emergency fill deck. Use of account/title file is described in paragraph 4-35.

3-86. INSERT TIME MODE

3-87. Refer to paragraph 2-21, Model 9001 Insert Time Mode.

3-88. INSERT SOURCE MODE

3-89. Refer to paragraph 2-11, Model 9001, Insert Source Mode. Substitute account numbers for Source/Shelf numbers.

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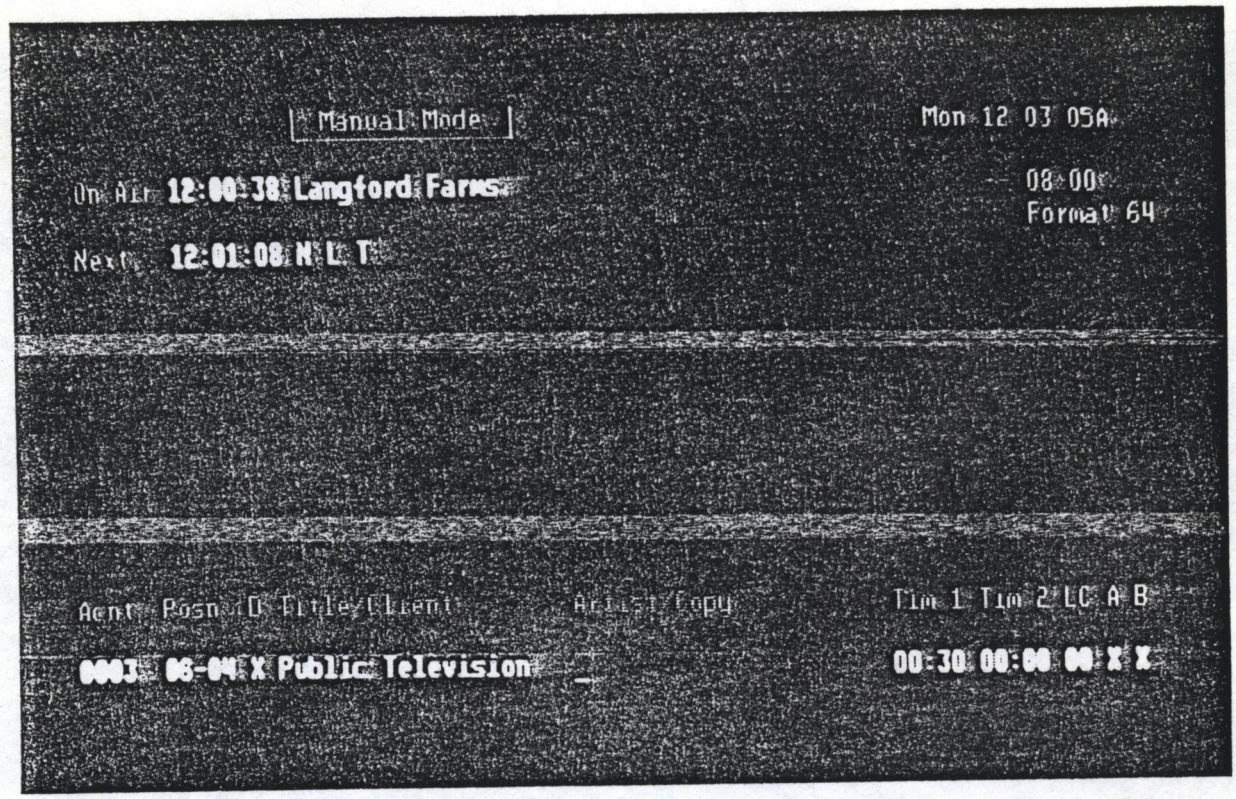


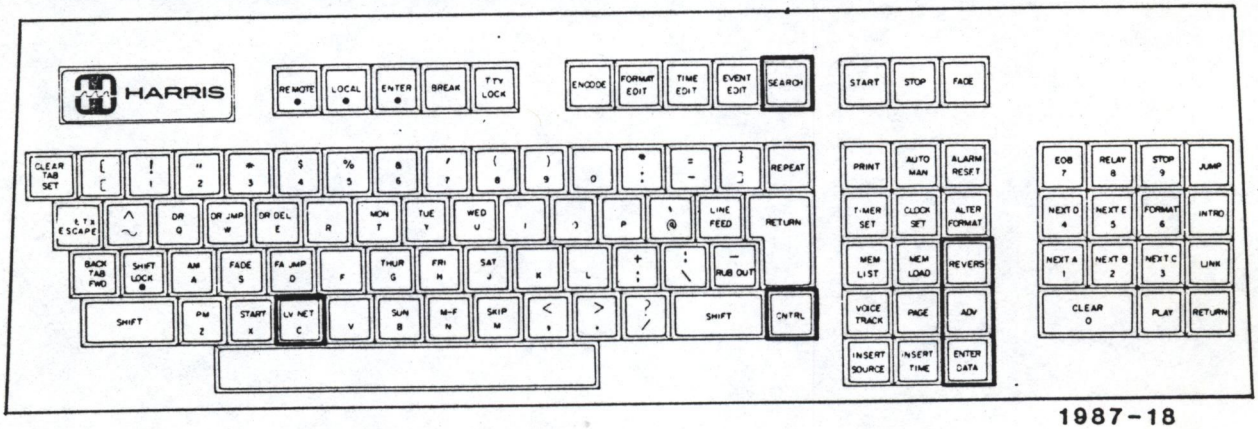


1987-18

9003 Title Edit Keyboard and Display

3-90. TITLE EDIT MODE

3-91. This mode takes advantage of the storage potential of the floppy disk subsystem. A numbering system is employed in a radio station to organize identification of air material in an orderly, categorized manner. Which numbers are reserved for what type of material is irrelevant. The Model 9003 allows the programming of a broadcast day by identifying the material to be aired, rather than the physical location of the material. When scheduling a program, the accounts are generated first, or the descriptions of what is available, then the events schedule is generated. With the TITLE

EDIT key is depressed, a prompt will appear on the CRT and an account number is then inserted (between 0001 and 1999). If no number is inserted, the ADV or REV keys may be used as in other editing modes to allow access to the current account of the most-recently-edited account. The system will then present the data corresponding to that account number. For example:

| ACNT | POSN | D | TITLE/CLIENT | ARTIST/COPY | TIM 1 | TIM 2 | LC | A | B |
|---|---|---|---|---|---|---|---|---|---|
| 1234 | 16 | N | DOUGLAS CRONKITE | MIDDAY NEWS | 05:00 | 05:00 | 00 | X | X |

a. The data under the POSN relates to the position or physical location of the material. In this case, Source 16 which is the Network.

b. The data under the D refers to the designation or type of material and must always be an alphabetical character. In the example, the N under the D is for news.

c. The description under the TITLE/CLIENT and ARTIST/COPY can be either two 20-character descriptions or one 40-character message. The selection depends on the program material. This data is shown in its entirety on the program log and on the operate display.

d. The TIM 1 and TIM 2 contains data which refer to the actual length of the material and to its scheduled length, respectively. A 60-second spot might be shown as TIM 1 = 00:57 (actual) and TIM 2 = 01:00 (scheduled). This improves the accuracy of the approximate time display and still allows a subsequently developed scheduling system to find all of the :60's and :30's.

e. The LC refers to a live copy option. If it is desired for a live copy message to appear on the control room terminal when this account goes on the air, specify the number of the live copy here. The system provides storage for 20 messages.

f. Fields A and B will be used in a subsequently developed scheduled system as protection codes for conflicting material. Both fields allow the use of single alphabetic characters.

3-92. To create or edit the above data, depress the ENTER DATA key and type in the needed information. The ADV and REV keys will permit moving from one area of the data to another. If the cursor moves out of the editing display, further use of the keys will cause the displayed account number to count up or down and the corresponding data to appear. When prompted, enter the nonexistent account numbers or Source/Shelf numbers.

3-93. DELETING AN ACCOUNT

3-94. To delete an account entry, display the account data. Then, either step through the data using the ADV or REV keys, or depress the TITLE EDIT key and enter the account number directly. Once the data appears, depressing the CONTROL/C key will delete that account data.

3-95. NONEXISTENT ACCOUNTS

3-96. If an event calls for account 1234 and it is blank, when the programmed event appears on the operate display there will be a blank line. If the situation is not corrected by the time that event becomes NEXT, the system will simply discard that event as if it were unprogrammed. This can be useful when it is desireable to pre-empt a piece of material without destroying its schedule. By destroying its description, the event data may be left intact. When the pre-empt period is over, restoring the account data will cause the associated material to start airing again. As a general rule, it is better to always create the account data before using those account numbers in programming the event memory.

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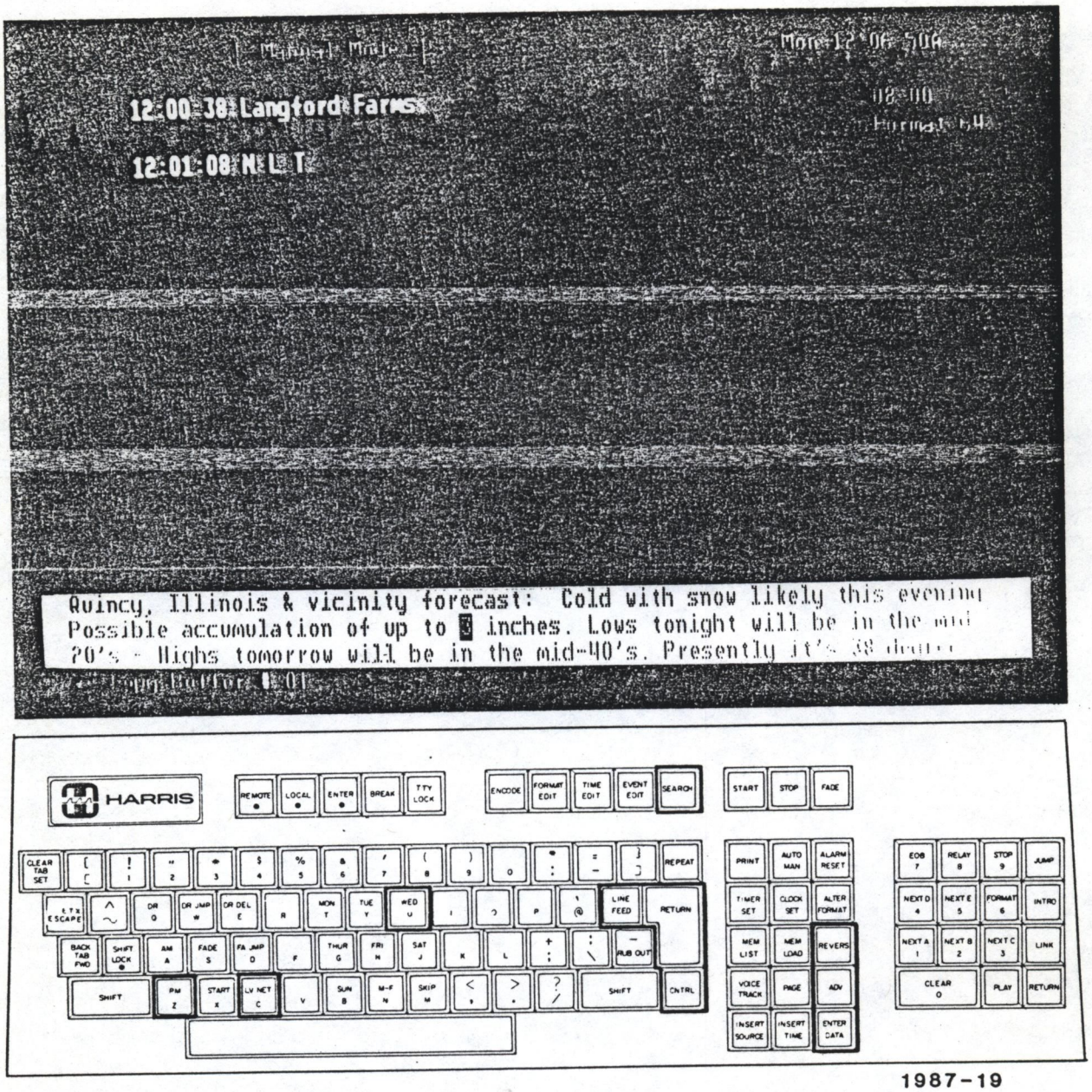


1987-19

9003 Live Copy Edit Keyboard and Display

3-97. LIVE COPY EDIT MODE

3-98. This mode allows inclusion of live copy as a part of the schedule. If it is desired to have live copy appear on the control terminal when creating accounts, a number from 01 to 20 can be entered under column LC. The live copy edit mode permits preparation or editing of the live copy.

3-99. To enter the live copy edit mode, depress and hold the CNTRL key, then depress the TITLE EDIT key. When prompted, enter a two-digit number (01 to 20); a three-line text area should appear on the CRT.





WARNING: Disconnect primary power prior to servicing.

3-100. To create or edit the text, depress the ENTER DATA key; a dark block cursor will appear at its HOME Position. Use either the typewriter keyboard to enter new text, or manipulate the cursor using the ADV, REV, RETURN, LINE FEED, and CONTROL/C keys as described in Encode Mode.

3-101. While editing the text, changes are not made permanent. If the message being edited appears on the display before completition, the text shown to the operator will be what is still on the disk, before editing. The edited or newly created text becomes permanent only if the CONTROL/Z is depressed after completion of edit. Depressing the CONTROL/U restores the original text in the message to the display. Any changes that have been made to the display (unless the CONTROL/Z key was depressed) are lost. In addition, if either the CONTROL/U or CONTROL/Z have been depressed, the editing cursor is lost. Depressing the ADV or REV keys under these conditions permits viewing of the following or preceding live copy messages. This also applied if live copy edit mode has been entered but the ENTER DATA key has not yet been depressed. Messages stored in the live copy buffers are general purpose. The text will appear at the bottom of the display at the moment the associated account is put on the air. The displayed text will remain there until it is either replaced by another message or until the operator erases it. The text can be used to pass format information or simple reminders to a live operator.

3-102. MODEL 9003 MAINTENANCE DISK

3-103. The purpose for the maintenance disk is to provide assistance in diagnosing suspect hardware or software. Because of the specialized nature of this system, experience and special equipment will be necessary for rapid repair. The test options will be presented in a menu format when the disk has been BOOTed by selecting the appropriate test.

3-104. SYSGEN DISK

3-105. Since the Model 9003 software is stored on a semipermanent recording media, it is possible to customize or reconfigure certain characteristics on the system. The purpose of the Sysgen disk is to permit easily tailored variations of the overall system. To activate the Sysgen Disk, set the Sysgen Disk in drive 0 and depress the pushbutton on the CPU board. Observe the CRT display and follow its prompting.

3-106. BACKUP SYSTEM

3-107. In most Controller applications, there will be A ROM-based backup system. If it becomes necessary to avoid use of the disk drives, the backup system can be activated as follows:

a. Locate the Control Logic 2 module (figure 3-3).

b. Set the NORMAL/EMERGENCY toggle switch to EMERGENCY; depress the pushbutton on the CPU board and the backup system is activated.

c. Set the NORMAL/EMERGENCY toggle switch to NORMAL.

3-108. SHUTDOWN PROCEDURE

3-109. Complete shutdown of the rack-mounted units in the Programmer Control is accomplished by lowering the front panel of the power supply and setting the POWER ON/OFF switch to OFF. Shutdown of the Control Console is accomplished by setting the console power switch to the off position.

SECTION IV

PROGRAMMING

4-1. INTRODUCTION

4-2. This section contains information and techniques that will aid the operator in preparing schedules for a daily, weekly, or any other desired format.

4-3. PROGRAMMING

4-4. BASIC PROGRAMMING CONSIDERATIONS

4-5. The following instructions is a list of suggestions to improve the efficiency of the programming format. Different configurations of the Program Control will produce varied operational criteria; however, the following considerations are applicable to any configuration.

4-6. PROGRAMMING AND SCHEDULING

4-7. There are two contributing factors to a radio broadcast day; scheduled programming (announcements) and sustaining material (programming). Scheduling refers to the orignization or time-scheduling of commercial announcements throughout the day while programming refers to the selection of entertaining or informative material meant to serve a given market (audience). Programming also refers to the packaging of this material around the scheduled announcements. The difference between scheduling and programming are:

| PROGRAMMING | SCHEDULING |
|---|---|
| Material selected by station | Material selected by others |
| 40 to 50 minutes per hour | 10 to 20 minutes per hour |
| Some untimed material | No untimed material |
| Some material preempted | Rarely is material preempted |
| Serves a broad market | Serves individual specific markets |
| Observes trends | Requires others to observe trends |
| Usually changes weekly | Usually changes daily |
| Managed by program director | Managed by sales department |
| Affected by audience | Effects on audience seen elsewhere |
| Meets license commitments | Meets ecomonic needs |

## 4-8. PROGRAM SEGMENTS VERSUS CONTINUOUS PROGRAMMING

4-9. There are two ways to provide programming to interface with the scheduled announcements; one is to break up the program into segments (blocks), or two, allow the scheduled announcements to interrupt the program (continuous programming). The continuous method provides for a smooth taper from slow, to medium, to fast music and back again and is subject to interruptions; however, at the end of the interruption, the flow is resumed. The segment method is designed to start and stop for scheduled announcements and is the most used method.

## 4-10. SEGMENT (BLOCK) PROGRAMMING

4-11. There are three considerations to be taken when using segment programming. They are:

a. Segment length (ensure that there is enough material for a worst case condition).

b. How the segment should begin.

c. At the end of the segment, how is the transition to be made into the upcoming scheduled announcements:

1. Stop at the end of the currently playing material even if it makes the scheduled material a little late.

2. Fade the currently playing material out in order to put the scheduled material on the air exactly on time.

3. Adjust the programming so that it ends exactly on time.

Segments need not be of equal length nor do the transitions need be the same. Method 1. is the most frequently used transition (Time Correction) and the segments, even if not of equal length, usually begin and end at about the same position each hour. An exception to this is a segment that precedes a network broadcast. In this case method 2. and 3. would provide the necessary transition. The simplest way to implement a format such as the one above, is sequential programming. Assuming that the segments are unique, a program is sequentially entered into memory at any available location in its event memory.

## 4-12. SEQUENTIAL PROGRAMMING

4-13. Sequential programming is the simplest and the most straight-forward. It is merely listing the sources to play. The timing is dependent on each source taking itself off-air and activating the next source through tone signals placed on the tape. Although it is time consuming, it offers the programmer the ultimate in control of sequences which have peculiar variations. The hour-by-hour sequential program is entered into memory, event-by-event, directly from a worksheet. After the program sequence is entered into memory, only minor daily changes are needed to revise the sequence to

comply with commercial additions and changes in the random access selections. The only consideration necessary in sequential programming is the amount of available space left for last-minute additions.

4-14. Every instruction that places a source on-air is programmed into memory as an event, regardless of its time duration. Thus, a two-hour program of music could use only five instructions (events) over the two-hour period while a series of 10 shorter events, such as commercials, announcements, etc., could use 10 instructions over a four-minute period. Sequential programming consumes more of the memory storage capability than any other method of programming, but is the method upon which all others are based. Variations to this basic method of programming, described in subsequent paragraphs, can be used to decrease the number of events stored in the memory without affecting the program flow.

4-15. Table 4-1 lists a sequential programming when the programmer wishes to correlate the first two digits of event number with real-time. He will allow for 100 events per hour, starting with event 0001 (midnight) and ending with event 2399. The example shows a programmed sequence intended for play during the period between 2 and 3 PM. Since specific physical locations have been entered in a particular order, the programmer must either change the sequence every day, or change the musical selections or commercials that are in these physical locations. Also note that no time instructions have been implemented in this format. It was the intention of the programmer to provide the necessary timing by adjusting the time used by the announcer and the newsmen. Audio sources 10 and 12 might be live and therefore would be time flexible.

4-16. SEPARATE COMMERCIAL FILE, MULTI-FILE™ PROGRAMMING

4-17. Tables 4-2 through 4-6 show examples of programming using the facilities of the MULTI-FILE™ Program Memory which use separately managed files for individual control of music and commercials. The entries shown are for the day-part 10 AM to 3 PM. The entries that will cause these events to work are:

a. Compare time 10:00:00A Format 01

b. Format 01 0100 2000 3000 4000 5000

Table 4-1. Sequential Programming

| EVENT | INSTRUCTION/ SOURCE | TITLE | EVENT | INSTRUCTION/ SOURCE | TITLE |
|---|---|---|---|---|---|
| 1400 | PLAY 11 | STATION ID | 1437 | PLAY 07-3 | COMMERCIAL |
| 1401 | PLAY 05-01 | MUSIC | 1438 | ---- | |
| 1402 | INTRO TO | ANNOUNCER | 1439 | ---- | |
| 1403 | PLAY 06-01 | MUSIC | 1440 | INTRO 10 | ANNOUNCER |
| 1404 | ---- | | 1441 | PLAY 06-15 | MUSIC |
| 1405 | ---- | | 1442 | ---- | |
| 1406 | PLAY 07-14 | COMMERCIAL | 1443 | ---- | |
| 1407 | PLAY 07-28 | COMMERCIAL | 1444 | ---- | |
| 1408 | PLAY 07-02 | COMMERCIAL | 1445 | PLAY 12 | WEATHER |
| 1409 | ---- | | 1446 | PLAY 07-15 | COMMERCIAL |
| 1410 | PLAY 09 | JINGLE | 1447 | ---- | |
| 1411 | INTRO 10 | ANNOUNCER | 1448 | ---- | |
| 1412 | PLAY 05-02 | MUSIC | 1449 | ---- | |
| 1413 | PLAY 08 | JINGLE | 1450 | INTRO 10 | ANNOUNCER |
| 1414 | PLAY 06-02 | MUSIC | 1451 | PLAY 03 | OLDIE |
| 1415 | PLAY 10 | ANNOUNCER | 1452 | PLAY 08 | JINGLE |
| 1416 | ---- | | 1453 | PLAY 04 | OLDIE |
| 1417 | ---- | | 1454 | ---- | |
| 1418 | PLAY 07-43 | COMMERCIAL | 1455 | PLAY 07-12 | COMMERCIAL |
| 1419 | PLAY 07-04 | COMMERCIAL | 1456 | PLAY 07-01 | COMMERCIAL |
| 1420 | ---- | | 1457 | PLAY 07-06 | COMMERCIAL |
| 1421 | PLAY 08 | JINGLE | 1458 | INTRO 10 | ANNOUNCER |
| 1422 | PLAY 05-03 | MUSIC | 1459 | PLAY 06-20 | MUSIC |
| 1423 | ---- | | 1460 | PLAY 08 | JINGLE |
| 1424 | ---- | | 1461 | PLAY 05-25 | MUSIC |
| 1425 | PLAY 12 | NEWS | 1462 | ---- | |
| 1426 | PLAY 07-11 | COMMERCIAL | 1463 | ---- | |
| 1427 | PLAY 12 | NEWS | 1464 | ---- | |
| 1428 | ---- | | 1465 | PLAY 12 | NEWS |
| 1429 | ---- | | 1466 | PLAY 07-44 | COMMERCIAL |
| 1430 | PLAY 05-06 | MUSIC | 1467 | PLAY 12 | NEWS |
| 1431 | PLAY 09 | JINGLE | 1468 | ---- | |
| 1432 | INTRO 10 | ANNOUNCER | 1469 | ---- | |
| 1433 | PLAY 06-11 | MUSIC | 1470 | PLAY 09 | JINGLE |
| 1434 | ---- | | 1471 | INTRO 10 | ANNOUNCER |
| 1435 | PLAY 07-02 | COMMERCIAL | 1472 | PLAY 05-47 | MUSIC |
| 1436 | PLAY 07-47 | COMMERCIAL | etc. | | |

Table 4-2. 10 AM to 3 PM Event Schedule

| EVENT | INSTRUCTION/ SOURCE | TITLE |
|---|---|---|
| 0100 | PLAY 11 | STATION ID |
| 0101 | NEXT B | CURRENT |
| 0102 | INTRO 10 | ANNOUNCER |
| 0103 | NEXT B | CURRENT |
| 0104 | NEXT C | COMMERCIALS |
| 0105 | PLAY 09 | JINGLE |
| 0106 | INTRO 10 | ANNOUNCER |
| 0107 | NEXT B | CURRENT |
| 0108 | PLAY 08 | JINGLE |
| 0109 | NEXT B | CURRENT |
| 0110 | PLAY 10 | ANNOUNCER |
| 0111 | NEXT C | COMMERCIALS |
| 0112 | PLAY 08 | JINGLE |
| 0113 | NEXT B | CURRENT |
| 0114 | PLAY 12 | NEWS |
| 0115 | NEXT C | COMMERCIALS |
| 0116 | PLAY 12 | NEWS |
| 0117 | NEXT B | CURRENT |
| 0118 | PLAY 09 | JINGLE |
| 0119 | INTRO 10 | ANNOUNCER |
| 0120 | NEXT B | CURRENT |
| 0121 | NEXT C | COMMERCIALS |





WARNING: Disconnect primary power prior to servicing.

Table 4-2. 10 AM to 3 PM Event Schedule (Continued)

| EVENT | INSTRUCTION/ SOURCE | TITLE |
|---|---|---|
| 0122 | INTRO 10 | ANNOUNCER |
| 0123 | NEXT B | CURRENT |
| 0124 | PLAY 12 | WEATHER |
| 0125 | NEXT C | COMMERCIALS |
| 0126 | INTRO 10 | ANNOUNCER |
| 0127 | NEXT D | OLDIE |
| 0128 | PLAY 08 | JINGLE |
| 0129 | NEXT D | OLDIE |
| 0130 | NEXT C | COMMERCIALS |
| 0131 | INTRO 10 | ANNOUNCER |
| 0132 | NEXT B | CURRENT |
| 0133 | PLAY 08 | JINGLE |
| 0134 | NEXT B | CURRENT |
| 0135 | PLAY 12 | NEWS |
| 0136 | NEXT C | COMMERCIALS |
| 0137 | PLAY 12 | NEWS |
| 0138 | PLAY 09 | JINGLE |
| 0139 | INTRO 10 | ANNOUNCER |
| 0140 | NEXT B | CURRENT |
| 0141 | JUMP TO 0100 | |

Table 4-3. Current Music Rotation Number 1

| EVENT | INSTRUCTION/ SOURCE | TITLE |
|---|---|---|
| 2000 | PLAY 05-01 | |
| 2001 | RETURN | |
| 2002 | PLAY 06-01 | |
| 2003 | RETURN | |
| 2004 | PLAY 05-02 | |
| 2005 | RETURN | |
| 2006 | PLAY 06-02 | |
| 2007 | RETURN | |
| 2008 | PLAY 05-03 | |
| 2009 | RETURN | |
| 2010 | PLAY 05-06 | |
| 2011 | RETURN | |
| 2012 | PLAY 06-11 | |
| 2013 | RETURN | |
| 2014 | PLAY 06-15 | |
| 2015 | RETURN | |
| 2016 | PLAY 06-20 | |
| 2017 | RETURN | |
| 2018 | PLAY 05-25 | |
| 2019 | RETURN | |
| 2020 | PLAY 05-47 | |
| 2021 | RETURN | |
| (MUSIC ENTRIES CONTINUE AS ABOVE TO EVENT 2997) | | |
| 2998 | JUMP TO 2000 | |

Table 4-4. Commercial Schedule

| EVENT | INSTRUCTION/ SOURCE | TITLE |
|---|---|---|
| 3000 | PLAY 07-14 | |
| 3001 | PLAY 07-28 | |
| 3002 | PLAY 07-02 | |
| 3003 | RETURN | |
| 3004 | ---- | |
| 3005 | PLAY 07-43 | |
| 3006 | PLAY 07-04 | |
| 3007 | RETURN | |
| 3008 | ---- | |
| 3009 | ---- | |
| 3010 | PLAY 07-11 | |
| 3011 | RETURN | |
| 3012 | ---- | |
| 3013 | ---- | |
| 3014 | ---- | |
| 3015 | PLAY 07-02 | |
| 3016 | PLAY 07-47 | |
| 3017 | PLAY 07-03 | |
| 3018 | RETURN | |
| 3019 | ---- | |
| 3020 | PLAY 07-15 | |
| 3021 | RETURN | |
| 3022 | ---- | |
| 3023 | ---- | |
| 3024 | ---- | |
| 3025 | PLAY 07-12 | |
| 3026 | PLAY 07-01 | |
| 3027 | PLAY 07-06 | |
| 3028 | RETURN | |
| 3029 | ---- | |
| 3030 | PLAY 07-44 | |
| 3031 | RETURN | |
| (COMMERCIAL SCHEDULE CONTINUES TO EVENT 3997) | | |
| 3998 | RETURN | (DUMMY RETURN IN CASE OF OVER SCHEDULED SPOT CALLS) |
| 3999 | JUMP TO 3998 | |

Table 4-5. Oldies Schedule

| EVENT | INSTRUCTION/ SOURCE | TITLE |
|---|---|---|
| 4000<br>4001<br>4002<br>4003<br>4004<br>4005<br>4006 | PLAY 03<br>RETURN<br>PLAY 04<br>RETURN<br>NEXT E<br>RETURN<br>JUMP TO 4000 | NOTE<br><br>These events rotate two oldies reels and one special program insertion. |

Table 4-6. Other (Special Music for Today Only)

| EVENT | INSTRUCTION/ SOURCE | TITLE |
|---|---|---|
| 5000<br>5001<br>5002<br>5003<br>5004 | PLAY 05-40<br>RETURN<br>PLAY 05-39<br>RETURN<br>JUMP TO 5000 | NOTE<br><br>These entries might be changed on a daily basis to provide some customizing of the basic format used between 10 AM to 3 PM to play special material as every third oldie called by the format during those hours. |





WARNING: Disconnect primary power prior to servicing.

## 4-18. TIME-CORRECTED PROGRAMMING

4-19. The Timing of the programming in the previous discussion was accomplished by varying the length of some program events, notably the live segments. In a fully automatic operation this is not practical, nor is it practical if the live segments are otherwise constrained, such as when a newscast has a specific intended length, and may be simulcast on a companion station, as in an AM/FM operation. The solution to this difficulty is to use the system Time Correction facility. Each period of time to be specifically limited in assigned a specific number of events, ending with an End-of-Block instruction. See table 4-7. The block may be overprogrammed or underprogrammed at user discretion. In either case, the system will not pass the End-of-Block event until a Time Correction is executed.

Table 4-7. Format Using Time Corrections and Underprogramming

| EVENT | INSTRUCTION/ SOURCE | TITLE |
|---|---|---|
| 9000 | PLAY 11 | BUFFER/ID |
| 9001 | NEXT C | COMMERCIALS |
| 9002 | PLAY 09 | JINGLE |
| 9003 | PLAY 01 | MUSIC |
| 9004 | PLAY 02 | MUSIC |
| 9005 | PLAY 01 | MUSIC |
| 9006 | PLAY 03 | MUSIC |
| 9007 | PLAY 02 | MUSIC |
| 9008 | PLAY 01 | MUSIC |
| 9009 | END-OF-BLOCK | MUSIC |
| 9010 | PLAY 11 | BUFFER |
| 9011 | NEXT C | COMMERCIALS |
| 9012 | PLAY 09 | JINGLE |
| | etc. | |

NOTE

Event 9000 started at 12:00:00 PM. Time Correction - WED --:13:00 GUARD/-JUMP caused event 9010 to be made NEXT. Event 9007 was on the air. The GUARD/JUMP instruction allowed the on-air event to finish, which it did at 12:14:50 PM, starting the new block with the station break. Programming continued from there until a similar time correction at half-past the hour.

4-20. As shown in table 4-7, the period of time being controlled is 15 minutes in length, the previous Time Correction having occurred at 58 minutes past the previous hour. The End-of-Block (EOB) instruction signifies that the previous source is the last source in that block of events and that the system will remain at that source (usually a reel-to-reel source) until updated to the next source by a time correction. However, in an overprogrammed block, the time correction occurs before the system reaches the EOB event.

4-21. The block of events can be underprogrammed by using fewer program events. During execution of an underprogrammed format, the system plays all sources in the block sequence until the EOB is sensed. The previous source continues to play until a time correction occurs. The underprogrammed format works well when that source is a reel-to-reel deck having a long-playing tape. However, it is not practical to schedule a tape cartridge as the last source because it cannot repeat itself. Table 4-7 shows an example of an underprogrammed format with time correction.

4-22. APPROXIMATE TIME CORRECTION

4-23. The most frequently employed time correction is the Guard/Jump instruction as shown in tables 4-7 and 4-8. When the real-time clock coincides with the compare time setting, the system interprets this function in the Compare Time Memory as an instruction to go immediately to the first event in the next block of events. If an EOB has not be programmed into memory, the EOB search will fail, causing the system to escape to event 0001. The entry in the Compare Time Memory for an Approximate Time Correction usually contains neither a specific day nor a specific hour. In this manner, one entry will provide time correction every hour, every day. If necessary, the entries may be more specific by entering a chosen hour or day or both. A No Operation entry may be made at a specific day or hour or both which will supersede (and therefore, nullify) a less specific entry. For example, the Compare Time Memory might contain the following entries:

| | |
|---|---|
| --:13:00 | Guard/Jump |
| --:28:00 | Guard/Jump |
| --:43:00 | Guard/Jump |
| --:58:00 | Guard/Jump |

These entries will cause Approximate Time Correction four times per hour, every hour, every day.

4-24. Assume that on Sunday morning, between 7:00 AM and 9:00 AM, the program format is altered to play half-hour program blocks instead of the usual quarter-hour blocks. The time corrections at quarter past and three quarters past 7:00 AM and 8:00 AM are not desired. They are nullified by the following entries in the Compare Time memory:

| | | |
|---|---|---|
| SUN | 07:13:00A | No Operation |
| SUN | 07:43:00A | No Operation |
| SUN | 08:13:00A | No Operation |
| SUN | 08:43:00A | No Operation |

Table 4-8. Underprogramming with Time Corrections

| EVENT | INSTRUCTION/ SOURCE | TITLE |
|---|---|---|
| 9900 | PLAY 11 | BUFFER |
| 9901 | NEXT C | COMMERCIALS |
| 9902 | PLAY 09 | JINGLE |
| 9903 | PLAY 01 | MUSIC SEGMENT (APPROX-IMATELY 10 MINUTES) |
| 9004 | PLAY 02 | MUSIC (INDIVIDUAL 2-TO 3-MINUTE SELECTIONS) |
| 9005 | END-OF-BLOCK | |
| 9906 | PLAY 11 | BUFFER |
| 9907 | NEXT C | COMMERCIALS |

NOTE

Assume event 9900 starts at 1:00:00 PM and the next time correction is at --:13:00 ( --:13:00 GUARD/JUMP). If event 9904 finishes at :10 past, a second or perhaps a third selection will be played from source 02. The number of selections will vary, depending on the length of the music segment on deck 01 and the commercials preceding it. If deck 02 is unable to repeat, then the emergency fill deck will act as a substitute. The time correction will act at the prescribed time, making event 9906 next. While deck 02 is repeating, the CRT display and the log will substitute the word HOLD for the number.

These four entries are more specific, containing both day and hour entries, and therefore, supersede the less specific entries which would otherwise occur at those times.

4-25. GUARD/JUMP

4-26. The word Guard is associated with this time instruction in order to allow for an unusual circumstance associated with one particular kind of programming; synchronized voice tapes. Refer to table 4-9.

Table 4-9. Guard/Jump

| EVENT | INSTRUCTION/SOURCE | TITLE |
|---|---|---|
| 9940 | PLAY 11 | ANNOUNCER |
| 9941 | PLAY 06-12 | MUSIC SELECTION |
| 9942 | PLAY 11 | ANNOUNCER |

If the time correction should occur while event 9940 is on the air and the announcer is introducing the music, the system will advance (Jump) to the first event in the next block instead of playing the referenced music selection (Event 9941). With a change in entry in Event 9940, an improvement can be made.

4-27. The Intro instruction (see paragraph 4-113, Talkover) and the Link instruction provide a useful feature; the Approximate Time Correction will be delayed (stored) until there is no active guard associated with the on-air event. As shown in table 4-10, Event 9940 has the Intro instruction (Link plus Talkover) and Event 9941 has a Link instruction. If the on-air event had either the Intro or Link instruction associated with it, the Approximate Time Correction will be stored. The result is that if the first or second of these three linked events is on the air when the time correction occurs, the remaining events of the group will all play. Once Event 9942 has begun, the Time Correction will execute, since Event 9942 has neither the Link nor Intro instruction.

Table 4-10. Guard/Jump with Link

| EVENT | INSTRUCTION/SOURCE | TITLE |
|---|---|---|
| 9940 | INTRO 11 | ANNOUNCER W/VOICE OVER MUSIC |
| 9941 | LINK 06-12 | MUSIC W/CLOSING TAPE TO FOLLOW |
| 9942 | PLAY 11 | CLOSING COMMENTS |

4-28. If the Guard/Jump time correction occurs during event 9940, the system will delay playing the next block until event 9942 is finished. This delay is due to the linking together of material which should play as a group of uninterrupted events, or not at all. If the delay in time correction is undesirable, the program should be modified so that such linked events are not scheduled near the time correction.

## 4-29. EXACT TIME CORRECTION

4-30. Frequently it will be necessary to place on-air a program whose starting time is not controlled by the local station, e.g., a network news segment, a remote broadcast of a ballgame, or a church service. Therefore, the program preceding the nonlocal program must end exactly on time. There are two ways in which to accomplish this; 1) fade out the on-air source, or 2) play a fill source of known duration. Table 4-11 shows an example of the fade out method. Note that the time corrections shown have a specific day assignment (Sat.). This would imply that these specific entries were intended to work only on Saturday. If these entries were expected to work throughout the week, the day assignment would have been omitted.

Table 4-11. Fade Out Method

| EVENT | INSTRUCTION/SOURCE | TITLE |
|---|---|---|
| 9950 | PLAY 01 | |
| 9951 | PLAY 02 | |
| 9952 | END-OF-BLOCK | |
| 9953 | PLAY 11 | STATION ID (:10) |
| 9954 | PLAY 16 | NETWORK |
| 9955 | PLAY 09 | JINGLE |
| 9956 | PLAY 03 | MUSIC |
| Time Instructions: | Sat --:59:47 Fade/Jump<br>Sat --:04:49 Leave Net | |
| NOTE<br>Regardless of whether event 9950 or 9951 is on the air, at 59:47 the on-air selection will fade out. At the end of the fade (approximately 3 seconds, but adjustable) the station ID will start event 9953, to be followed at exactly :00:00 by event 9954, the network newscast. The --:04:59 instruction causes the system to leave the net and start the jingle. | | |

4-31. One method of making an exact time correction involves the use of the Dead Roll/Jump time correction and a source of known duration. Table 4-12 shows an example of the Dead Roll/Jump method. The Compare Time entry Dead Roll/Jump instructs the system to jump to the next event block and dead roll (start, but do not place on-air). The dead roll source (a source card is required) may be either a cartridge or reel-to-reel tape transport. When

Table 4-12. Dead Roll/Jump Method

| EVENT | INSTRUCTION/SOURCE | TITLE |
|---|---|---|
| 9950 | PLAY 01 | |
| 9951 | PLAY 02 | |
| 9952 | END OF BLOCK | |
| 9953 | PLAY 13 | NET FILL MUSIC (03:35) |
| 9954 | PLAY 11 | STATION ID (00:10) |
| 9955 | PLAY 16 | NETWORK |
| 9956 | PLAY 09 | JINGLE |
| 9957 | PLAY 03 | MUSIC |

TIME INSTRUCTIONS:

| | |
|---|---|
| Sat --:56:15 | Dead Roll/Jump |
| Sat --:59:47 | Dead Roll Delete |
| Sat --:04:59 | Leave Net |

NOTE

A tape has been prepared with a number of instrumental selections, all 3:35 long on a tape which is source 13. Regardless of whether event 9950 or 9951 is on the air, at 56:15 past, the system dead rolls deck 13 and makes source 13 (event 9953) next. Since its length is known, source 13 will end at exactly 59:50. When the on-air source is finished, the system fades into the conclusion of source 13.

Occasionally the on-air material may run long. In that case, such a dead roll selection will never get to play. The second time instruction shown, at 59:47 past prevents that situation. If at 59:47 past, the dead roll tape is not yet on the air, the system skips (deletes) the scheduled dead roll tape and begins to fade. If 59:47 had been the final choice, that should have been the time it would have been appropriate to fade. In this case it will sound as if that was the case. The on-air material is faded out, the ID runs ten seconds, and the net is joined at :00:00. As in the previous example, at :04:59, the network ends, followed by a jingle and the program continues.

this technique is used, the dead roll source must be source 13. All cuts on the dead roll tape must be of the same length since the performance of the system depends on the accuracy of the playing time (start to beginning of End-of-Message) of the dead roll source. It is recommended that the dead roll tape have a time duration equivalent to the average time duration of a typical musical selection.

4-32. Experience with the system and the material to be aired using it will produce the best combination of time corrections for satisfactory and timely program flow. Preparation of a dead roll tape requires care and planning. In this example all cuts are 3:35 long. It will be very time consuming to find any great number of musical selections of that length. Longer selections may be used by recording only the last 3:35 of such selections. Shorter selections may be used if only slightly shorter than 3:35, leave blank tape ahead of the music (the chances of this being aired are small) or combine the end of one selection and all of another to achieve a 3:35 total. This gives the effect of fading into the next-to-last selection, rather than the last, should the dead roll source be called upon soon after it is started.

4-33. TIME INSERTION PROGRAMMING

4-34. When the intent of the programmer is to interrupt rather than correct the scheduled events, to allow for playing of timely material, a different scheme must be employed. Time insertion programming involves a simple modification to the methods shown previously. Most likely there is a repeating schedule of music selections, with occasional adjustments via time corrections. Those time corrections are used only when it is desired to correct the music flow. All other material is inserted (made Next) by any of the Next A through Next E commands entered in the Compare Time Memory. Thus, a file of events, arranged as subroutines, can produce the desired material at the appropriate times while allowing the original music schedule to Stay in Place during the interruption. The system will resume playing from the music schedule upon encountering the Return instruction at the conclusion of any of the inserted breaks. Table 4-13 shows that the music loop is file A. All it does is rotate the three music decks. At 10 and 40 minutes past each hour, commercials are inserted from the B file. As with the Guard/Jump instruction, this instruction allows any on-air selection to conclude and also can be delayed by the presence of linked material on the air.

4-35. As in previous examples, assume the station is joining network. The net join events, as used before, have been placed in a separate and reusable file called E. At 56:15 past, instead of time correcting as with the Dead Roll/Jump instruction, only a Dead Roll instruction is used, followed one second later by inserting the E file as next. The dead roll-into-net sequence will happen as before, but the station will keep track of which music deck is next and can be started after the news. As with the use of multiple files in the event memory, it is also practical to make one file part of a larger one (if it saves space). The system will keep track of where the Return instruction is going; up to 8 levels deep (nesting).

Table 4-13. Time Insertion

| EVENT | INSTRUCTION/SOURCE | TITLE |
|---|---|---|
| 9960 | PLAY 01 | MUSIC |
| 9961 | PLAY 02 | MUSIC |
| 9962 | PLAY 03 | MUSIC |
| 9963 | JUMP TO 9960 | REPEAT |

TIME INSTRUCTIONS:

| | |
|---|---|
| Sun --:10:00 | Next B |
| Sun --:40:00 | Next B |
| Sun --:56:15 | Dead Roll |
| Sun --:56:16 | Next E |
| Sun --:59:47 | Dead Roll Delete |
| Sun --:04:59 | Leave Net |

**CAUTION**

IF A COMBINATION OF THE TIME CORRECTION METHOD AND THE TIME INSERTION METHOD IS DESIRABLE, THE ONLY CARE NEEDED WILL BE IN MAKING CERTAIN THAT A TIME CORRECTION DOES NOT TAKE PLACE DURING THE PLAYING OF THE INSERTED MATERIAL. IF IT IS NOT LINKED MATERIAL, IT WILL BE THROWN AWAY WITH THE UNNECESSARY EVENTS IN THE MAIN SEQUENCE AS THE SYSTEM TRIES TO FIND THE NEXT END-OF-BLOCK ENTRY.

The Voice Track instruction is used for updating Talk Tapes for program services that record 25 Hz tones on the right channel.

4-36. LINKING

4-37. If the station format uses a tape to announce each musical selection, it is necessary to ensure that the approximate time correction Guard/Jump does not result in one selection being announced and a different selection being aired due to the system jumping to the next block of events. To retain the integrity of format, it is best to play the announced selection and start the next block of events late. To accomplish this delay, use the Link instruction as shown in table 4-10. With the Link instruction included in the program, if source 08 is playing when the time correction occurs, the jump to the next block will be delayed until the linked source 03 is started. Therefore, sources 08 and 03, must both play, or neither will play.

4-38. TALKOVER

4-39. Another means of accomplishing the linking is to start the musical selection under the announcement by using Intro instead of Link. Adjust the volume control on the musical tape source card to achieve the necessary reduction in volume. Any number of events may be linked in this manner. Refer to table 4-14.

Table 4-14. Example of Programming Format for Linking of Random Access Source, with Talkover

| REAL TIME | PROGRAM ENTRY | | TITLE |
|---|---|---|---|
| | EVENT | SOURCE SHELF | |
| | 0020 | INTRO 07-48 | Announce Tape |
| | 0021 | PLAY 03 | Music |

4-40. The duration and placement of the EOM signal determines the starting time of the next event and the amount of time the previous event remains on the air. The placement of the EOM signal on the talk tape will activate the music tape. The duration of the talk tape EOM, inserted during the recording of the tape, determines the amount of time the music tape plays at decreased volume if an Intro instruction is employed. When the talk tape goes off air, the music tape comes up to full volume. Refer to figure 4-1.

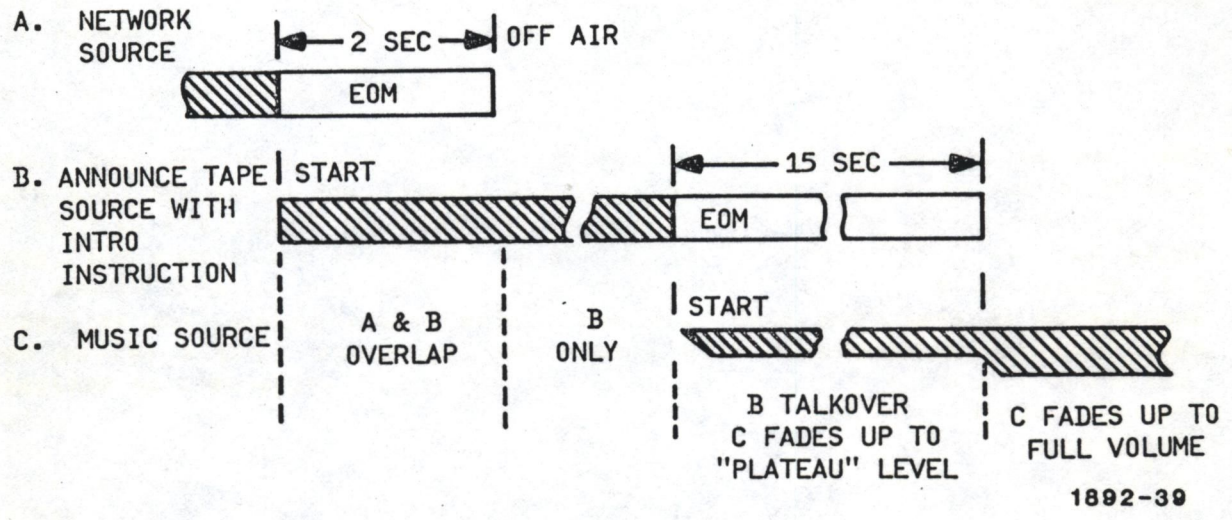


Figure 4-1. Example of Simulated EOM with Intro Talkover Attached to Next Event

4-41. SIMULATED END OF MESSAGE SIGNAL

4-42. When the format includes a network source, it may be necessary to use a time instruction to exit the source because most networks do not provide an End-of-Message (EOM) signal. Leave Net is entered into the Time Compare memory to simulate an EOM signal. This instruction has no effect should a source other than the network source be on-air at the time it occurs.

4-43. DEAD ROLL SOURCE

4-44. The Dead Roll source I/O module operates in a manner similar to the Reel-to-Reel module, but provides the following special logic operations:

a. If the dead roll command has started the dead roll source, the source will still indicate Ready status to the system.

b. If the dead roll source reaches an End-Of-Message (EOM), the source will then appear as Not Ready to the system.

c. Once the dead roll source is selected as next on-air, but is not put on-air, and the Select Next command is changed (due to time correction or advancing beyond the dead roll source), the dead roll source will appear as Not Ready to the system.

4-45. PROGRAM SILENCE SENSING

4-46. With the system in the AUTO mode and the Program Sensor switch in the on position, any on-air source that does not produce a sufficient level of audio to the silence sensor input circuit will cause the adjustable program delay time to time out, signaling the controller to start the next scheduled source. If two program silences are detected in sequence, without an EOM signal inserted between them, the controller will automatically select the fill deck, place it on air, and activate the alarm. Scheduled programming will resume when the fill deck selection is completed.

4-47. NOT READY SOURCE SENSING

4-48. When the next source to be played is sensed to be Not Ready. Not Ready will appear in the Operate Display. With the system in the AUTO mode and with an EOM signal detected by the controller, if the Next source is not ready, the controller will skip to the following event (Next +1) and place that source on-air. However, if two consecutive sources are not ready, the controller will automatically select the fill deck and place it on-air and turn on the alarm. Scheduled programming will resume when the fill deck selection is completed.

4-49. SIGNING OFF

4-50. There are several ways to deliberately stop the system. However, only the two most commonly used methods are outlined. First, scheduling of the sign off announcement as part of the regular station break or commercial schedule. When the last break of the day plays, its last or perhaps only ingredient is the sign-off announcement. The instruction Stop System should follow the sign-off event. At this point it might be appropriate to use a format instruction to reset file pointers for their next use. Another way to sign off is by using a format instruction which sets up any of the file pointers at an event sequence where the appropriate sign off entries have been made. Again, the Stop System event entry will cause the system to assume manual operation status as soon as the sign-off announcement begins. At the conclusion of the announcement, the system will be idle. The On-Air status display will have disappeared from the CRT.

4-51. When writing the first programs, ensure that the system has an automatic trap for unrecoverable program loops by resetting all files to event 0001 and placing the A file in immediate control.

NOTE

Program Loop Escape will appear on the terminal and a diagnostic E will print on the log when this occurs.

While debugging the first programs, place a Format instruction at event 0001, such that the file pointers are reset to an area of memory where there is space for any desired programming, such as playing a reel or two and a few PSA's with a jingle or ID included. The alarm will be turned on while this is playing. One example of a condition that can cause this is:

```
7000   Play 01
7001   ----
7002   ----
7003   Jump to 7001
```

As is evident, if the system advances past event 7000, it would ordinarily never be able to recover from the Jump instruction. An operator at the CRT would have been able to see this peculiar condition as event 7000 began to show up in the Lookahead display and also would have seen the Loop occurring before it happened. As event 7000 is used by the system, there will be only a slight hesitation. The real-time clock system will continue to operate and soon spot the problem and the system will trap to event 0001. At this time the special emergency format can take over.

SECTION V

GLOSSARY

5-1. INTRODUCTION

5-2. This section contains miscellaneous reference information.

5-3. INSTRUCTION SET GLOSSARY

5-4. A brief explanation of the different instruction sets are given below.

| | |
|---|---|
| END-OF-BLOCK | An instruction that separates a group of events scheduled for the next time period from those in the present time period. The Compare Time Memory can initiate the playing of material immediately after this instruction and the event memory will be prevented from going past this event ahead of time. |
| RELAY | An instruction to operate one of eight relays when passing this event on the air. |
| STOP | An instruction that will cause the current playing previous source to be the last to play; the system will then stop. |
| JUMP | Jump to the indicated event. Only the program counter currently in use will be altered. |
| NEXT A thru NEXT E | Remembers which file is playing; then go to the next event in the indicated file. |
| FORMAT | One of 64 instructions that can alter any or all of the NEXT event pointers and optionally set a specified file as next-to-play. |
| INTRO | An instruction to play a source, then another, without interruption by Compare Time Memory so that the volume of the second source will remain low (adjustable) until the end of the playing of the first source. |
| LINK | An instruction to play a source, then another, without interruption by Compare Time Memory. |
| PLAY | An instruction to play a source (machine) but is subject to interruption by Compare Time Memory. |
| RETURN | Return to the previous file. |
| VOICE TRACK | An instruction to cue the voice tape (tape will cue to 25 Hz on the right channel). |
| ---- | A display indicating an available event. |

5-5. DIAGNOSTICS

5-6. Diagnostic characters used in programming are as follows:

* - Source not ready and not aired
# - Unprogrammed insertion of Fill deck by system
A - Event was aborted by operator at CRT terminal
E - System escaped to event 0001 during event execution
F - Event faded out before its completion
L - Event faded out before its completion due to programmed time limit in joining live broadcast
M - Event started from CRT terminal
P - Program silence sensor terminated this event
V - Loss of primary ac occurred during this event
X - Loss of transmitter audio detected during this event

5-7. INSTRUCTION SET

5-8. PLAYING INSTRUCTIONS

5-9. PLAY. This is the most common instruction. It tells the system what source or source/shelf is to play. It is always accompanied by a source number and sometimes a source/tray combination.

5-10. LINK. This instruction is similar to the play instruction except that its source and the following source will play together without interference from the most frequent Compare Time memory instructions.

5-11. INTRO. This instruction is similar to the Link instruction except that it starts the following source at a reduced level until the end of the EOM tone on the Intro source.

5-12. STOP INSTRUCTION

5-13. The Stop instruction ("Stop System") causes the system to enter the manual mode immediately. It will stop playing on receipt of the EOM from the on-air source.

5-14. JUMP TO INSTRUCTION

5-15. PROGRAM LOOPS. The user can set up a repeating group of events by entering a Jump To instruction at the end of the repeat area so that the Jump To event is the beginning of the area to repeat. An example of this is as follows:

1000 Play 01
1001 Play 02
1002 Play 03
1003 Play 04
1004 Jump To 1000

5-16. PATCHING FREE SPACE INTO A PROGRAM. In the event a program is so congested that it is impossible to add new entries, the user can Patch more event space into the program as follows:

```
1000  Play 01
1001  Play 02
1002  Jump to 9000 (Patch)
1003  Play 04
1004  Jump to 1000

9000  Link 33       (New Entry)
9001  Play 03       (Old Entry)
9002  Jump to 1003 (Exit Patch)
```

5-17. PARTITIONING MEMORY FOR PROTECTION. The system normally bypasses empty events. If, however, upon playing the last entry in a memory area, the associated file pointer is looking at empty memory until it reaches an area of memory reserved for some other use (e.g., a religious broadcast). It is possible that an attempt to use the same file in a later operation will result in the unwanted airing of material not intended to be associated with that file pointer. For example, if a sub file exists between events 0501 and 0800, and another file begins at event 1001, the file pointer serving the 0501 to 0800 area will skip to 1001 when it has played the last event prior to or including 0800. Some protection can be achieved by entering a Jump To 0501 at event 0800 (or 0801 if 0800 is used).

5-18. FORMAT INSTRUCTION

5-19. An event may be programmed with a Format XX instruction (XX is the number of a specific format table location, 01 through 64). When this event is reached in executing the on-air program, the control of the event order is subject to alternation by the contents of the Format table. In its simplest form, this could be used to reset a file pointer as a result of having reached a particular phase in the event sequence (rather than a time related action). In a more complex application, several file pointers may be reset at the same time and control may be transferred from one file to another.

5-20. SUBROUTINE INSTRUCTIONS

5-21. NEXT A INSTRUCTION. While executing on-air programming, the Next A instruction causes control to be transferred to the A pointer. When this occurs, the identity of the file that contained the Next A instruction is remembered. When a Return instruction is encountered in the A file, control will return to the file that contained the Next A instruction (at its next event).

5-22. NEXT B, NEXT C, NEXT D, NEXT E INSTRUCTIONS. These instructions perform in a manner similar to the Next A instructions described above.

5-23. SUBROUTINE NESTING. The identity of the file that contained a Next A (through Next E) instruction is remembered until a Return instruction occurs. When files call upon one another in series without Return instructions after each call, the result is Nesting. For example, the A file may call the B file, and the B file may call the D file. The D file, upon encountering a Return instruction, passes control back to the B file and a Return instruction in the B file will pass control back to the A file. In this example, the D file is said to be Nested within the B file since it plays without having been called by the A file.

5-24. Nesting is permitted because the identity of the file that calls another is remembered in a stack. Each new Next A (through Next E) instruction adds to the stack, and each Return uses the information most recently added to the stack which uncovers the previous information for the next Return instruction. The stack provides up to eight levels of nesting (this is in excess of most needs in a system with five files). The stack remembers the eight most recent Next instructions; however, attempting to nest beyond eight levels will result in unexpected action when the ninth Return is executed (the ninth Return is ignored). The only pointer-changing instructions that do not affect the stack are the Format XX instruction and the Jump To instruction.

5-25. END-OF-BLOCK INSTRUCTION. The End-of-Block (EOB) instruction identifies the last event in a group (block) of events intended to fill a particular time segment. When overprogramming is used, the EOB event is rarely put on-air; however, when underprogramming is used, the EOB is often aired more than once. The normal on-air execution of a program format will not pass an EOB instruction but will remain at the last playable event preceding the EOB. When this event is Next for the second successive time, the event number is replaced by the word Hold (which also appears on the log if the source is aired more than once).

5-26. TIME COMMANDS. The EOB event is passed (in normal operation) by a Guard/Jump, Fade/Jump, or Dead Roll/Jump Time command. An exception would be the Guard/Jump command which might be delayed if the on-air source was an Intro or Link instruction. On execution of one of these Time Commands, the format advances (observing all encountered instructions) until it finds the first playable event beyond the EOB event.

5-27. UTILITY INSTRUCTIONS

5-28. Some of the utility instructions are as follows:

a. VOICE TRACK - An instruction that causes the (optional) Voice Track Synchronizer to search for the next synchronizing signal (25 Hz right channel tone).

b. RELAY XX - An instruction that causes the operation of one of the eight utility relays. Each relay is energized for approximately one-half second and only one RELAY XX instruction can be located between any two airable events and only one relay at a time can operate.

c. TIMER XX:XX - An instruction that may be used to provide a visible countdown display associated with the on-air event. The time entered can be any amount of time up to 59 minutes, 59 seconds. The display changes to reverse video when less than 11 seconds remain. this is to alert the operator that there is only a short time remaining. A strapping operation on the Limit Module permits the assignment of relays 07 and 08 to provide external indication in association with the countdown display. When enabled, relay 07 operates when the display changes to reverse video; relay 08 operates when time runs out.

5-29. COMPARE TIME MEMORY

5-30. PRIMARY (UNRESTRICTED) COMMANDS. The primary commands are as follows:

a. The Start instruction causes the system to begin playing the Next event and places the system in Auto mode. In the event that the Next source is Non-Ready, it will be bypassed in the Auto mode.

b. The Remote Load instruction prepares the system for receipt of Event, Compare Time, and Format information via the Load/Copy equipment, and sends to the Load/Copy equipment the Tape Start character.

c. The Format instruction (FORMAT 01 through FORMAT 64) assigns file pointers and designated control file according to the information loaded in the selected Format entry.

d. The Relay instruction (RELAY 01 through RELAY 08) causes operation of the selected relay (approximately 1 second).

e. The No Operation instruction is used to nullify a time correction which otherwise would be generated by a lower priority entry.

5-31. SECONDARY (AUTO MODE ONLY) COMMANDS. The secondary commands are as follows:

a. The Stop instruction places the system in Manual mode, allowing it to stop at the end of the on-air event. The on-air event is not affected.

b. The Fade/Start instruction starts the Fade circuit. Audio is reduced from full level to a very low level. At the bottom, the on-air source is removed from the air, the audio level is restored to normal, and the Next source is started.

c. Jump instructions consist of:

1. GUARD/JUMP. The Guard/Jump instruction causes the format to advance instantly through successive events until an End-of-Block instruction is located. The following playable event then becomes Next. This action is delayed if the on-air event had been programmed with a Link or Intro instruction.

2. FADE/JUMP. The Fade/Jump instruction combined the Fade activity (Fade/Start) with the Jump activity but no Guard protection. When executed, the Fade/Jump causes a fade of the on-air source, jump to the first playable event of the next block, and a start of that event at the conclusion of the fade.

3. DEAD ROLL/JUMP. The Dead Roll/Jump combines the Dead Roll activity with the Jump activity but no Guard protection. When executed, the Dead Roll/Jump instruction causes the start of the dead roll source, and the jump to the first playable event of the next block, which should be source 13. Upon conclusion of the on-air event, the dead roll source is aired with a fade-in, beginning when the on-air source End-of-Message begins.

d. The Dead Roll instruction causes the dead roll source to begin playing tape. The tape is not on-the-air, but the source card will maintain a Ready status unless the End-of-Message is detected. If called on while in this dead roll mode, the source is joined by a fade-in action.

e. The Skip-Dead Roll instruction is conditional. It operates only under the following conditions.

1. The Dead Roll/Jump instruction has been executed.

2. Source 13 is Next to play.

3. If executed, the Skip-Dead Roll instruction initiates a Fade/Start action, fading out of the on-air event and advances once, deletes the dead roll source as Next, and starts the next playable event at the conclusion of the fade.

f. The Leave Net instruction causes the Live/Network source card (in source 16) to generate an End-of-Message signal. The length of this signal is adjustable on the source card.

g. The Next A through Next E instructions cause control to be shifted to the designated file. The Next event at the time of the execution of these instructions will be remembered for later use (after a Return instruction). These instructions will be delayed if the on-air event is protected by a Link or Intro instructions.

5-32. COMPARE TIME ENTRY PRIORITIES

5-33. The Compare Time Entries are assigned priorities as follows: Type 1, Specific Day - Specific Hour; Type 2, Specific Day - Any Hour; Type 3, Weekday - Specific Hour; Type 4, Weekday - Any Hour; Type 5, Any Day - Specific Hour; and Type 6, Any Day - Any Hour. Any entry of a lower number type will take precedence over an entry of a higher number type, both having the same minutes and seconds. For example:

M-F 11:35:00A RELAY 08 (type 3)

will cause Relay 08 to operate every weekday at 11:35:00A. If this operation is different on Thursday, the following entry might be made:

THU 11:35:00A RELAY 07 (type 1)

Since the new entry is of a higher priority than the first entry (Specific day vs. Weekday), Relay 07 will operate on Thursday, Relay 08 will operate on Monday, Tuesday, Wednesday, and Friday.

5-34. Repetitive entries have no specific day or hour; for example:

--:28:30 GUARD/JUMP

This type of entry will execute every hour of every day. Since it is of the lowest priority (type 6), it may be replaced by another type. For example:

SUN --:28:30 NO OPERATION

This entry prevents the 28:30 Guard/Jump from occurring on Sunday, or it may be altered. For example:

11:28:30A FORMAT 56

In this case, the usual correction one-half hour before noon, each day, will not take place. Instead, a format adjustment will take place in accordance with the instruction stored at FORMAT 56.

5-35. Some types of activities can be entered either of two ways. If it was desired to have a relay operate at 5:55 AM every day except Sunday. The entries might be:

SUN 05:55:00A NO OPERATION
05:55:00A RELAY 05

The higher priority SUN entry will inhibit the other entry which would otherwise operate every day. Alternatively, the entries might be:

SAT 05:55:00A RELAY 05
M-F 05:55:00A RELAY 05

In this case, one entry will cause operation of the relay on Saturday, while the other entry will cause operation Monday through Friday.

5-36. FORMAT MEMORY

5-37. The Format Memory is a Lookup Table. It has 64 possible entries, each of which may assign event numbers to any or all of the five files that can be used in the HARRIS 9000 PROGRAM CONTROL. The user may establish up to 64 different combinations in assigning and locating the five files. Each format entry has a data space for each file. Each of these may specify an event number (e.g., 1358) or deliberately leave a file unaffected by using the No-Operation entry, 0000. In addition, a format entry may cause a change in the file providing the Next event to go on-air.

5-38. The 9000 PROGRAM CONTROL is unique in its support of Reusable programming. That is, the ability to specify when commercials or news or a particular type of music should play as an event, by using a generic name, like Next D, instead of calling on a specific subroutine by event number. The saving in execution becomes more obvious when it is pointed out that in the system's second or third pass through the same Loop of such Resuable entries, different commercials, music, etc. will be put on the air via the same generic name.

5-39. The function of the format memory is to define what is the Next A, Next B, Next C, Next D, or Next E at times when the user finds it desirable to define the file locations. An example is the Format Memory entry which could allow the system to automatically reset all of the appropriate file pointers to the proper events prior to sign on. The following entry is made which defines Format 20:

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 20 | [1000] | 0200 | 4000 | 0000 | 0000 |

This Format Memory entry sets file A to event 1000, sets file B to event 0200, sets file C to event 4000, but does not alter the position of files D, E. In addition, file A is made the control file so that event 1000 is the Next event. When the program execution encounters a Next C instruction, control will shift to the C file (which will be at event 4000 when the first Next C is encountered).

NOTE

The brackets above (on event 1000 in the file A entry) denote an entry which will appear in reverse video on the CRT.

5-40. SIGNING ON

5-41. The HARRIS 9000 PROGRAM CONTROL may be initialized for daily use with an appropriate Format Memory entry in conjunction with entries in the Compare Time Memory. For example, if the system is to start automated programming at 5:57:30 AM on weekdays, the following entries might be used:

```
M-F  05:55:00A   FORMAT 20
M-F  05:57:30A   START SYSTEM
```

The 5:55 AM entry makes use of the Format Memory entry to initialize the system with event 1000, assigned by the A file as Next, with file B set at event 0200 for its first use, and file C set at event 4000 for its first use.

5-42. Assume that file B is a music rotation which is called upon by a Next B instruction in file A when music from this rotation is needed. In this example, file B is 48 events in length (0200 through 0247), ending at event 0248 with a Jump to 0200 entry. Obviously, this rotation will repeat as often as it is called upon to use the 48 events. At 10:00 AM, a different music rotation is desired, again 48 events in length, and again it must repeat when used through 48 events. This new rotation is entered at events 0250 through 0297, and at 0298 a Jump to 0250 entry.

5-43. In the Compare Time Memory, the following entry is made:

M-F 10:00:00A FORMAT 21

and in the Format Memory this entry is made:

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 20 | 0000 | 0250 | 0000 | 0000 | 0000 |

When executed, this entry will place the file B event pointer at 0250, the beginning event of the music rotation. It is permissible to redefine a file location while a called file is providing on-air events. Assume that file A has called upon file C to provide commercials at the end of an hour. Ordinarily, upon completion of the commercials, activity will return to file A, and it will begin to repeat because of a Jump To . . . instruction. In this case, at 8:59 AM, a change in the location of the file A event pointer is desired. A Compare Time Memory entry is made:

08:59:00A FORMAT 16

and in the Format Memory, this entry is made:

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 16 | XXXX | 0000 | 0000 | 0000 | 0000 |

Where XXXX is the first event to the new format which is to become file A. The Compare Time entry should be made to occur while the last use of file C is being made in the 8 AM to 9 AM hour. While the file C events are being played, the Time Correction occurs, the Format entry is executed and file A is repositioned. When the events from file C are completed, a Return instruction again places file A in charge. Since the Return instruction is a direction to go back to the previously used file, and not to a specific event, the new file A events will be used next.

5-44. Assume again that the program director wants to change one of the music files to a different rotation following the 3:15 commercials. Format 40 is defined as, Change D to 4126 and places the entry Format 40 into the 3:15 commercials. Upon reentering the same general program that has been running, perhaps all day, the D file now plays a different music rotation. there might be another music file that has been left active at its old place and will be changed at another time. It is also practical to use the format memory to cause the entire file structure to change. Thus, when the A file calls upon the E file for a special program, a format entry in the E file might cause the system never to return to A, instead it leaves E in control with A, B, C, and D all relocated to new memory areas where they can be ingredients of the new program.

5-45. Any Format Memory entry that specifies the Next file and the event in that file, may be referred to as an Inferred Jump-To entry. It identifies the Next event precisely, just as a Jump-To instruction would. The Format Memory may also be used in conjunction with the Compare Time Memory to guarantee synchronization of the file handling commercial material. Assume that 600 events of file C are allowed per day, and assure synchronization at 5:00 AM (sign-on), 10:00 AM, 3:00 PM, and 8:00 PM. At these times, network news runs from 55 minutes past the hour to the top of the hour (excluding at sign-on). At sign-on, an entry similar to that shown earlier will be used. This will require seven such entries as follows:

```
MON  05:55:00A  FORMAT 30
TUE  05:55:00A  FORMAT 31
WED  05:55:00A  FORMAT 32
                        etc.
```

While in the Format Memory, enter:

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 30 | [1000] | 0200 | 5001 | 0000 | 0000 |
| 31 | [1000] | 0200 | 5601 | 0000 | 0000 |
| 32 | [1000] | 0200 | 6201 | 0000 | 0000 |
| 33 | [1000] | 0200 | 6801 | 0000 | 0000 |

etc.

These entries provide for synchronization at sign-on. At 10:00 AM, the plan requires seven more Format Memory entries and Compare Time entries as follows:

```
MON  09:58:00A  FORMAT 37
TUE  09:58:00A  FORMAT 38
WED  09:58:00A  FORMAT 39
                        etc.
```

and

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 37 | 0000 | 0000 | 5151 | 0000 | 0000 |
| 38 | 0000 | 0000 | 5751 | 0000 | 0000 |
| 39 | 0000 | 0000 | 6351 | 0000 | 0000 |
| 40 | 0000 | 0000 | 6951 | 0000 | 0000 |

etc.

In each case the file C pointer is set to an event 150 greater than was done with the sign-on entry. Similary, at 3:00 PM, the entries read:

```
MON  02:58:00A  FORMAT 44
TUE  02:58:00A  FORMAT 45
                        etc.
```

and

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 44 | 0000 | 0000 | 5301 | 0000 | 0000 |
| 45 | 0000 | 0000 | 5901 | 0000 | 0000 |

And finally, at 8:00 PM, the entries are:

```
MON  07:58:00A  FORMAT 51
TUE  07:58:00A  FORMAT 52
                        etc.
```

and

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 51 | 0000 | 0000 | 5451 | 0000 | 0000 |

etc.

This technique may be useful in situations where commercial matter (file C) is frequently changed at the last minute, and the chances of having an incorrect total number of Return instructions is higher than it should be.

## 5-46. PROGRAM CONTROL SYSTEM FOR D.J. ASSIST

5-47. The term D.J. Assist is applied to the mode of operation in which the 9000 PROGRAM CONTROL is used as a source of music and/or commercial material during live programming under control of a disk-jockey. Such a need arises when a user programs live during certain portions of the day (such as drive time) while operating fully automated at other times.

5-48. D.J. Assist can be accomplished in several different ways. The first decision to be made is whether the D.J. needs the Program Control terminal at his disposal. If not, D.J. assist might require only a single pushbutton and some indicator lamps.

5-49. The next decision to make is to decide whether the D.J. Studio Console will appear as a source in the Automation System program, or if the Automation System will appear as an input to the D.J. Studio Console. The method of programming the Automation System may be exactly the same in either case. In the latter method, the D.J. has greater flexibility in that he may talk over any material which comes from the Automation System. In the former method, the D.J. cannot be on-the-air except when the Automation System is idle.

5-50. If the D.J. has the control terminal at his disposal, the programming requirement is as follows:

a. Leave the system in MANUAL MODE, or program a STOP SYSTEM instruction after each spot cluster. If the D.J. wishes to run a cluster, he depressed the START key to begin the first spot and then depresses the AUTO/MAN key to place the system in the AUTO mode. When the last event of the cluster begins, the STOP SYSTEM instruction is encountered and returns the system to the MANUAL MODE. If the AUTO MODE is not chosen, each event in the cluster will have to be started individually by depressing the START key.

b. Leave the Automation System programming in one file, if possible. Do not use any RETURN instructions until it is desirable to return to automatic programming.

c. Make sure that there will be no unexpected changes in programming due to Compare Time entries which may be used at other times of the day. If necessary, provide nullifying Compare Time entries.

d. Automatic or semiautomatic handling of network news breaks can be accomplished through proper use of file changes and Compare Time entries. For example, consider the following situation:

1. Commercials are being played from file C.

2. About a minute before news time, a Compare Time entry calls for Format 55.

3. Format Memory 55 leaves files A through D untouched, but positions file E at event 5990.

4. Event Memory location 5990 begins the following:

| EVENT | INSTRUCTION | CONTENTS |
|---|---|---|
| 5990 | PLAY 05-47 | JINGLE :10 |
| 5991 | PLAY 16 | NETWORK |
| 5992 | PLAY 05-48 | STATION ID |
| 5993 | RETURN | |

5. Approximately 15 seconds before news time, a Compare Time entry calls for NEXT E. Alternatively, the NEXT E instruction might be in the C file after the last commercial for the segment.

6. The News sequence is initiated by the D.J. ten seconds before news time, or there may be a Compare Time entry at the proper time to START SYSTEM.

7. Upon starting the Station ID, the System will return to the C file, where it will continue playing events until it encounters a STOP SYSTEM instruction.

5-51. If the D.J. is to have only a single pushbutton rather than the control terminal, the pushbutton is the End-of-Message pushbutton for Automation System source 12. If the chosen mode is Studio-into-Automation System, Source 12 is the D.J. and causes the next event to begin by depressing the EOM pushbutton. The D.J. may talk over the event(s) that follow by holding the pushbutton depressed (but is off-the-air once the pushbutton is released), until the Automation System again calls for Source 12. If the chosen mode is Automation-System-into-Studio, the D.J. goes on-the-air at will, but the Automation System source 12 is still programmed to provide a resting place. By doing so, the System will stop, but remain in automatic.

NOTE

To permit resting, the Automation System must have the Silence Sensor inhibit wiring added so that the Sensor is inoperative while Source 12 is on-the-air.

Consider the following program:

a. At an appropriate time, a Compare Time entry calls for FORMAT 40.

b. Format Memory entry 40 leaves files B through E untouched (unless they need to be moved for this format). File A is positioned at 5981.

c. Event Memory location 5981 begins the following:

| EVENT | INSTRUCTION | CONTENTS |
|---|---|---|
| 5981 | PLAY 12 | D.J. or Resting Place |
| 5982 | NEXT C | Calls for Commercial file |
| 5983 | JUMP TO 5981 | Back to D.J. |
| 5984 | PLAY 05-47 | JINGLE :10 |
| 5985 | PLAY 16 | NETWORK |
| 5986 | PLAY 05-48 | STATION ID |
| 5987 | NEXT C | Calls on Commercial file |
| 5988 | JUMP TO 5981 | Back to D.J. |

d. When the D.J. depresses the EOM button, the C file event which is Next is caused to play. C file events continue until a Return instruction sends control back to the A file at event 5983, and then to 5981. This loop continues indefinitely, playing an event or group of events from the C file each time the EOM pushbutton for Source 12 is depressed.

e. At the appropriate time, a Compare Time file entry calls for FORMAT 41.

f. Format Memory entry 41 cxauses the A file to go to event 5984. The next time the D.J. depresses the EOM pushbutton, the News sequence is started. When it is complete, the sequence returns to event 5981 because of the JUMP TO instruction at event 5988.

5-52. It is possible that the D.J. may inadvertently depress the EOM pushbutton too many times during the live segment. If no precaution is taken, this would put the C file ahead of where it should be. The solution to this is to provide an alternate format to protect against this as follows:

a. Format entry 40 (paragraph 4-140c.) would include data to set the E file at event 5995.

b. Event Memory location 5995 begins the following:

| EVENT | INSTRUCTION | CONTENTS |
|---|---|---|
| 5995 | PLAY 12 | D.J. or Resting place |
| 5996 | END OF BLOCK | Holds sequence |
| 5997 | RETURN | Goes back to C file |
| 5998 | JUMP TO 5995 | Resets this file |

d. After the last C file event in each program block, a Next E instruction is entered before the Return.

e. One second before the Compare Time entry which calls FORMAT 41, a Compare Time entry performs a GUARD/JUMP.

5-53. In actual operation, the above sequence progresses through the regulator loop of events. 5981, 5982, the required events from the C file, event 5983 and back to event 5981. When the last C file event for a live segment has been started, control shifts to event 5995. Because of the End-of-Block entry, the program progresses no further until the GUARD/JUMP Time Correction. At that time the sequence moves instantly to 5997, back to the C file (to a Return instruction) and on to 5983 and 5981. The C file is properly positioned for the first commercial following the News. The E file, when next called, will start at event 5998, then to 5995 which is where it is needed. There are other ways to execute the D.J. Assist concepts. The above material represents only one of the many possible methods.