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AIR TRAFFIC CONTROL TRAINING SERIES



GENERAL

**STANCIL 20/40 SERIES
RECORDER**

1 July 1994

AT-G-21

FOREWORD

PURPOSE: This publication is for use in the training of USAF air traffic controllers and is not intended to replace, substitute for, or supersede official regulations, procedures, or directives.

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The purpose of this training series is to familiarize USAF air traffic controllers with the operation and use of the AN/GSH (Stancil 2040 Logging Recorder System). Though not specifically addressed in this training series, description and operating procedures for the tape reproducer AN/GSH system are basically the same as for the recorder system. This series is divided into two sections:

Section I, Controls - Contains the description of controls and indicators used in operating the system.

Section II, Operation - Contains the operating procedures for the system.

Section I

CONTROLS

1. TAPE THREADING (Figure 1)
 - a. Reel Hub - Holds tape reels on system.
 - b. Outer Idle -Used in tape threading.
 - c. Tape Sensor - Prevents operation of the transport when there is no tape in the normal tape path due to breakage or end of tape.
 - d. Inner Idle - Used in tape threading.
 - e. Head Cover - Protects heads and other items under cover.
 - f. Pinchwheel Roller - Applies pressure against capstan in order to keep tape properly aligned.
2. TAPE TRANSPORT (Figure 2)
 - a. Search, Cue Control -Used to activate/rotate to fast forward/rewind.
 - b. Stop - Halts all transport activity.
 - c. Record - Used to activate recording function.
 - d. Play - Activates normal tape speed for playback.
3. RECORD/PLAYBACK ELECTRONICS PANEL (Figure 3)
 - a. Start/Search - Initiates automatic search.
 - b. Autosearch - Thumbwheel switches for selecting time to be searched.
 - c. LED Display - Display of real or played back time.
 - d. Set Time - Used to set correct time of day.
 - e. Display - Activates display for designated real time search, set or test functions.
 - f. Volume - Adjusts volume of audio output at speaker or headphone jack.

- g. Re-record - Produces steady output for re-recording.
- h. Speaker - For listening to audio.
- i. Headset - Plug-in headset to listen to audio.
- j. Channel Select:
 - (1) Numbers 1- 0 plus Enter - To select channels for playback.
 - (2) Right DOT - Selecting automatic failsafe changeover.
 - (3) Left DOT - Cycles INPUT, UPPER, LOWER, FAILSAFE modes.
- k. Channels Selected - Displays channel modes and output selected.

SECTION II

OPERATIONS

1. THREADING THE TAPE TRANSPORT REELS (Figure 1)

Before operating, load tape on transports as follows:

- a. Press STOP on the Head Cover. The STOP LED indicator light should come on.
- b. Place a full reel of tape on the left hand (supply reel) turntable so that tape will unwind as the reel is rotated COUNTERCLOCKWISE. Match slots in reel with ridges on turntable to align reel. Hold reel and turn turntable HUB to secure to turntable.
- c. Place empty reel on right hand (take-up reel) turntable and match slots in reel with ridges on turntable to align reel. Secure Keel by turning HUB on turntable.
- d. Unwind about three feet of tape from the supply reel and thread it following the TAPE PATH in the Tape Threading Guide. The oxide side (dull side) of the tape must face up towards the heads.
- e. Route the tape over the top of the take- up reel and secure the free end by winding several layers of tape on the hub in a COUNTERCLOCKWISE direction.
- f. Rotate the take- up reel to remove all tape slack and check to make sure tape is properly threaded and not twisted.

NOTE: The recording heads on this system are very sensitive and you should not use OLD or WORN tapes. The use of old or worn tapes may cause the recorder's failsafe system to alarm.

CAUTION: If tape is not threaded properly, the tape transport may not operate correctly and the tape may be damaged.

Refer to figures 2 and 3 for the following operations.

2. MANUAL OPERATIONS

- a. Recording
 - (1) With the tape threaded and power ON, press PLAY and RECORD simultaneously. The indicator lights will come on and the tape will start moving forward at normal speed.

- (2) To monitor the signals being recorded cycle left dot to INPUT and select the desired channel or channels. The input audio signals will be displayed on the W bar graph and be audible at the loudspeaker. Adjust volume control to desired level.
- (3) If a headphone is to be used, connect the headset plug to the phone jack and adjust the volume control for desired headphone audio level.
- (4) When you wish to terminate the recording, press STOP.

b. Playback

- (1) With a previously recorded tape threaded and power ON, press PLAY. The play LED will come on and the tape will start moving forward at normal playback speed.
- (2) To monitor the reproduced audio, select the desired channel number(s) and set SELECT to: UPPER or LOWER, depending on which tape deck is to be played back. The playback audio signals will be displayed on the W bar graph and be audible at the loudspeaker. Adjust volume control for desired level.

NOTE: Playback of recorded tapes should only be done on the reproducer.

c. Fast Forward Mode

- (1) To cause the tape to move forward at high speed, PRESS IN and RELEASE the SEARCH KNOB then rotate the SEARCH control CLOCKWISE.
- (2) To stop the tape motion, either center the knob or press STOP.
- (3) To slow the tape, rotate SEARCH control COUNTERCLOCKWISE until the desired speed is attained.
- (4) If it is required to audibly monitor the tape, hold the SEARCH control in and it will CUE the tape.
- (5) When finished, press STOP.

d. Rewind Mode

- (1) After the tape has been played back or recorded, it should be rewound on the supply reel.

- (2) To cause the tape to move in the reverse direction at high speed, place the transport in STOP mode, PRESS IN, release SEARCH control, and then rotate the SEARCH control COUNTERCLOCKWISE.

NOTE: Do not hold the SEARCH button IN unless you intend to "CUE" the tape to the heads. This feature prevents excessive head wear during search.

3. SETTING UP FOR AUTOMATIC CHANGEOVER

In dual transport systems, you may automatically start recording on a standby transport whenever a failure or out of tape condition occurs on the operating transport or when the Digitime changeover signal is received at midnight.

- a. Start recording on the primary transport as described earlier. The standby transport should be in STOP.
- b. Cycle LEFT DOT display select to FAILSAFE and press RIGHT DOT activating AUTO CHANGE. See that both LEDs are illuminated.
- c. The recorder will normally receive its automatic changeover signal at midnight from the time generator. Automatic changeover at any selected hour of the day is accomplished with a simple modification (accomplished by maintenance).

4. FAILSAFE ALARM

- a. Cycle LEFT DOT to illuminate FAILSAFE LED.
- b. Make sure at least one deck is recording. The scanner channel display should be moving from channel to channel.
- c. In automatic operation, the Recorder/Reproducer will automatically switch from one tape transport to the other in the event of failure. The time reference system will cause a changeover from primary tape transport to standby transport at midnight. There will be a period of approximately 1.6 hours of simultaneous recording by both transports to insure that communications occurring at midnight are not
 - a. separated on two tapes. At the end of the tape, that transport will automatically stop.
- d. After completing reloading of a transport following a changeover, perform setup for automatic changeover (para 3). The standby transport will be ready to resume recording operation when required.

5. CHECKING FAILSAFE

(Refer to Figures 1 and 4 for failsafe check)

After you have set the failsafe alarm, you must check to ensure the systems failsafe is actually operational. With one deck operating and the other deck in stand-by, pull the TAPE LIFT SHAFT BAR (#15, Figure 4) of the operating deck down, (located under the head cover item E, Figure 1). This will pull the tape away from the heads and simulate "record failure" on all channels. There will be about a 10 second delay before the alarm signals and the changeover occurs.

6. TIME CODE READER FUNCTION

- a. The time code reader reads out and displays time information from the tape recorded on a multichannel recorder. It shares with the generator an illuminated display and continuously indicates the time of the original recordings at normal speed or in the various high speed search modes. The time display is updated once each second at normal tape speed and reads in either direction at any tape speed.
- b. The reader is equipped with two inputs and can be switched by the monitor select switches to read and display the time for either transport. In addition, the "RESET" position on the monitor select allows reading directly from the generator.

7. AUTOSEARCH FUNCTION

- a. The autosearch function provides automatic positioning of previously recorded tape for selective replay. It automatically seeks out any previously recorded time at high speed from any point on the tape and initiates playback of the recording at that point on the tape.
- b. Thumbwheel switches are provided to preselect the desired time. The operator sets the monitor select to read the desired transport, dials the desired time and initiates autosearch by PUSHING the AUTOSEARCH BUTTON on the left side of the panel.

8. SETTING CORRECT TIME

- a. Set the DISPLAY switch on the time code unit to the SET position. Press the SET TIME switch to advance the time. At first, the minutes will advance slowly, but as the switch is held, the rate will progressively increase. If the switch is released momentarily, the advance will resume at the slowest rate when it is again pressed. The SET TIME switch will not set the minute and hour counters back, only forward. If absolutely necessary to set the time back, you must go through midnight.
- b. Use the SET TIME switch as described in a. to set the time code unit to a time that is ahead of the reference (set it ahead of the time you wish to set) by less than a minute.

Then, when the Reference (the time you want) reaches the next minute mark, **MOMENTARILY** tap the **SET TIME** switch to reset the seconds to zero without changing the minutes or hours counts. The switch **SHOULD NOT** be held in for more than about **HALF A SECOND** or the minutes will start to advance.

9. SEARCHING FOR A GIVEN TIME

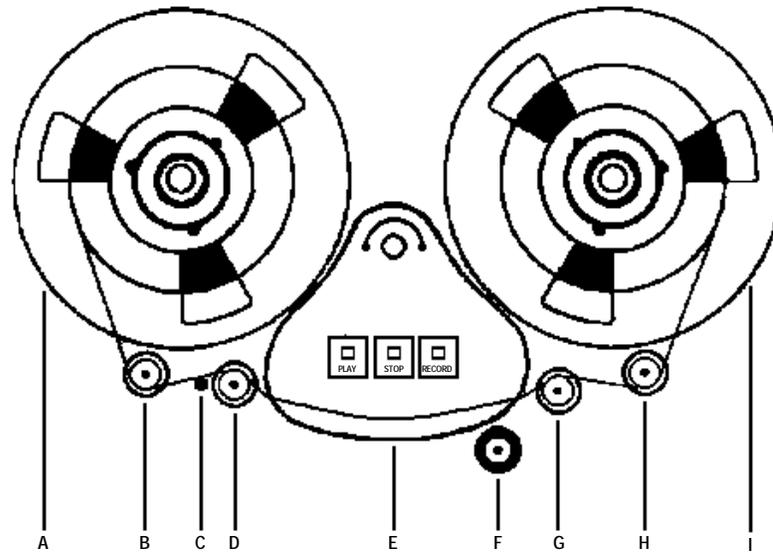
a. Manual

- (1) When it is desired to find a given time on a tape previously recorded, set the **MONITOR SELECT** switch to either **UPPER DECK** or **LOWER DECK**, depending on the tape to be searched.
- (2) Use the search mode of the transport to move the tape backward or Forward, as required. The display will advance or regress to always indicate the time on the tape as it passes the reader head.

b. Automatic

- (1) Thread the tape to be searched on a transport and set the **MONITOR SELECT** switch to either **UPPER DECK** or **LOWER DECK**, depending on which transport contains the tape to be searched. **USE THE REPRODUCER UNIT TO TRANSCRIBE TAPES.**
- (2) Set the **AUTOSEARCH** switches on the time code unit to the desired time.
- (3) Place the transport in **PLAY** mode and push **AUTOSEARCH** button by the time display and the tape will be wound to the selected time automatically.
- (4) While in the autosearch mode, if the reader does not receive valid time data after a certain length of time, (such as a blank tape) the transport will coast to a stop and wait for human intervention.

Tape Threading Guide



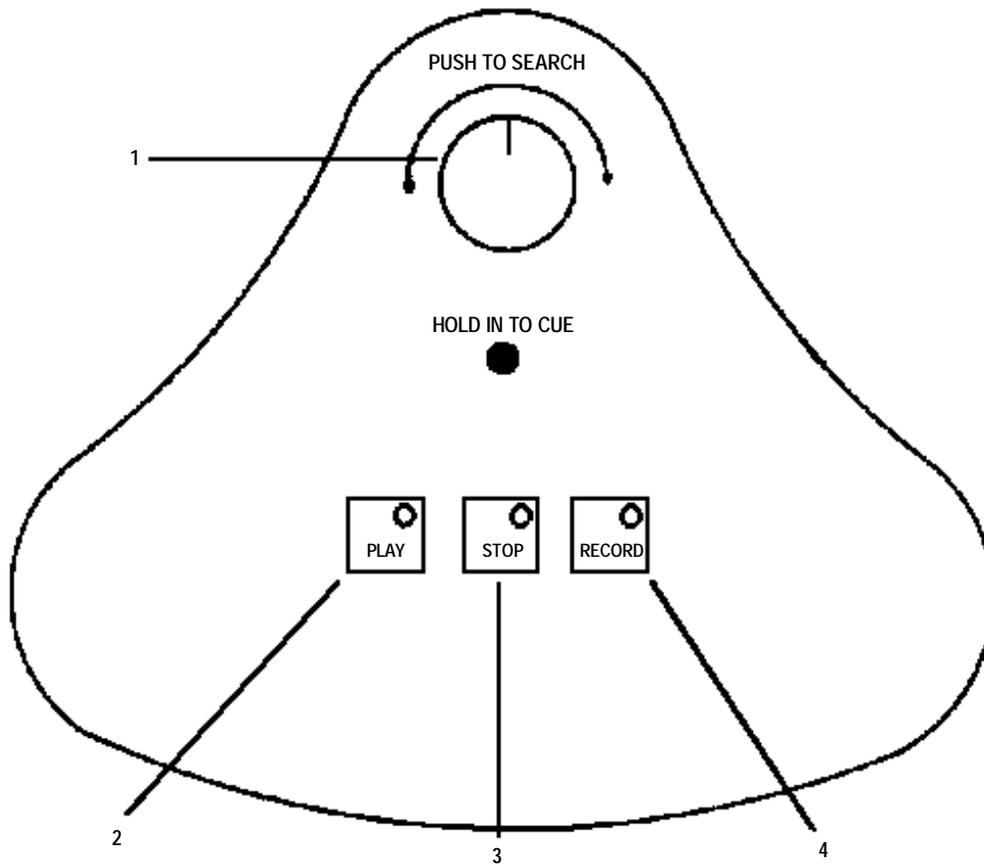
1. Place machine in STOP mode and make sure STOP light is on.
2. Install full feed reel (A) and make sure it is seated against the turntable flange. Turn hub to lock reel in place.
3. Install empty take- up reel (I) in same manner.
4. Unwind 2- 3 feet of tape from the feed reel.
5. Run tape under left outer idler (B).
6. Run tape through the tape sensor assemble (C).
7. Run tape over left inner idler (D).
8. Run tape under all items protected by the head cover (E).
9. Run tape over the pinchwheel roller assembly (F).
10. Run tape over .the right inner idler (G).
11. Run tape under right outer idler (H).
12. Wind tape onto take- up reel (I) smoothly.
13. Rotate reels until tape is taut.

NOTE: Tape goes over items only:

1. The lower half of the tape sensor (C).
2. The left inner idler (D).
3. The pinchwheel assembly (F).
4. The right inner idler (G).

Figure 1

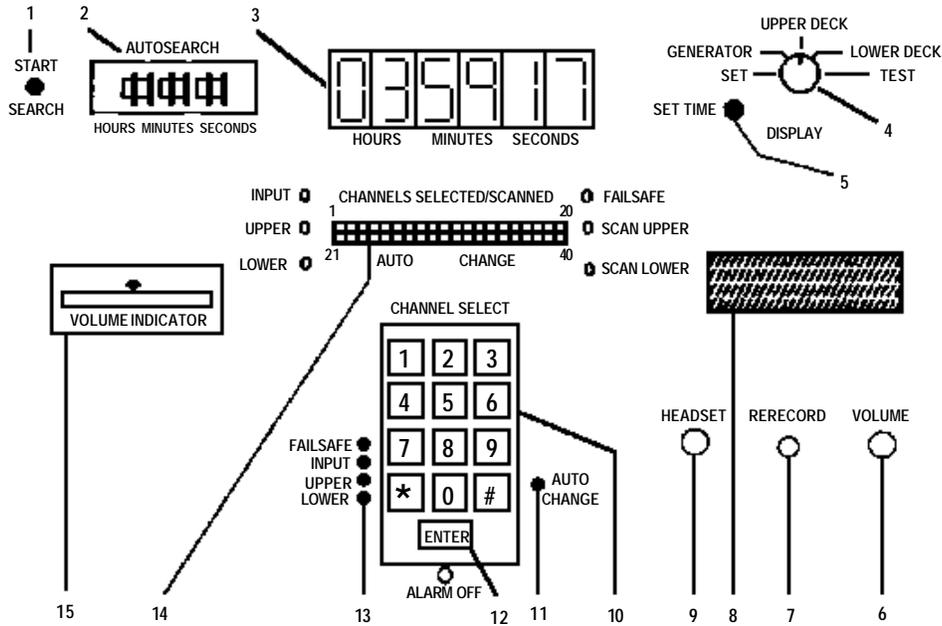
Tape Transport Controls



1. Search, Cue Control: Push to activate/rotate to faster forward/rewind, hold in to cue. (LED illuminates when activated)
2. PLAY: Normal tape speed for playback. (LED illuminates when activated)
3. STOP: Halts all transport activity. (LED illuminates when activated)
4. RECORD: Must be held down simultaneously with PLAY to activate. (LED illuminates when activated)

Figure 2

Record/Playback Electronics Panel Layout



1. Start search button
2. Autosearch time select switch
3. Time display
4. Time display select switch
5. Time set button
6. Volume control
6. Rerecord jack
7. Speaker
8. Headset jack
9. Numbers 1-0 to select channels
10. Right dot to set AUTO CHANGE
11. Enter to select channels
12. Left dot to cycle input upper, lower, failsafe
13. LED display, 2 rows of square lights indicate channels selected or scanned. Single round lights indicate playback or failsafe mode selected
14. LED bar VU meter
15. ???????

Figure 3

Under Head Cover, Head Assembly

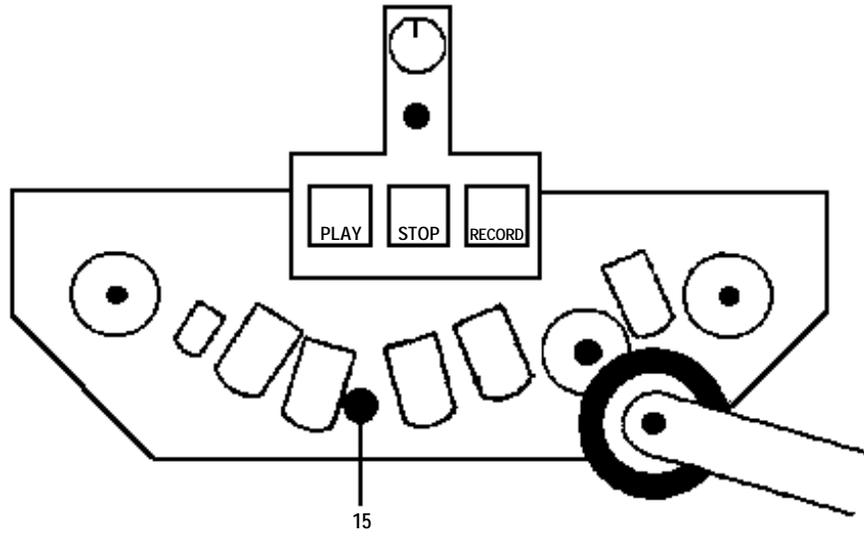


Figure 4