

## SEQUENTIALLY CONTROLLED AUTOMATIC TRANSMITTER START SYSTEM (SCATS)

### 28 ASR OUTLYING STATION

#### DESCRIPTION, OPERATION, AND TEST PROCEDURE

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#### 1. GENERAL

**1.01** This section gives a description, the operating principles, and test procedure for the 28 ASR outlying station circuit per EA-12632-SD.

#### 2. DESCRIPTION

**2.01** This circuit was designed for use at an outlying station on a SCATS system (EA-10669-SD) for the purpose of placing the 28E Transmitter-Distributor (TD) of a 28 ASR under control of the 28 stuntbox.

**2.02** The object of this control is to enable the TD to respond to the Transmitter Start Code (TSC) and "quiet" code transmitted from a SCATS control station.

**2.03** TSCs must be in the sequence FIGS \* S LTRS. The second character(\*) may be any alphabetical letter except H or Q.

*Note:* FIGS HS LTRS is reserved for station selection assurance while FIGS QS LTRS is used for the "quiet" code arrangement.

**2.04** Speed of operation may be 60, 75, or 100 wpm.

**2.05** This circuit in its present design is applicable only to half-duplex operation.

**2.06** On receipt of an assigned TSC, stuntbox operation should furnish a transmitter start if tape is available.

**2.07** The circuit will recognize end-of-tape and taut or tangled tape and stop the transmitter.

**2.08** With the line circuit idle and a "no-tape" condition at all stations, the control circuit will recognize the FIGS QS LTRS "quiet" code when transmitted from the SCATS control circuit which thereupon becomes deactivated.

**2.09** If tape is made available during this "quiet" period, the first few LTRS character will be transmitted serving to release the TSC circuit for continued search and stopping the transmitter to await a sequential transmitter start.

**2.10** These same conditions would have resulted had tape been made available at any other station or had a line "hit" occurred.

**2.11** A means is provided for a manual transmitter start if required for emergency operation.

**2.12** A major advantage of this 28 ASR arrangement is that, although operation is entirely automatic for transmitting and receiving under normal conditions, it may be put in the "test" condition for local testing purposes.

**2.13** When in this "test" condition, any of the automatic features can be simulated manually. This eliminates the necessity of online testing which might result in lost circuit time.

**2.14** The equipment, aside from the required stuntbox parts for transmitter start control, consists only of one dc control TS relay (TP155558). This relay is mounted inside the 28 cabinet.

### 3. THEORY OF OPERATION

**3.01** Assuming a "tape-available" condition, receipt of a TSC by the stuntbox will operate the function bars and levers in slots 18, 19, and 20 in sequence to close the normally open contact of slot 20.

**3.02** This will complete the operate path of TS relay. Relay TS operated and locked will close the operate path for the transmitter clutch magnet to start transmission.

**3.03** During transmission, if the tape should become taut, tangled or torn, the lock path for the TS relay will be broken, and transmission cannot start again until a new TSC poll is made.

**3.04** Note that the tape must be reinserted in the gate so that addresses will be resent, otherwise the previously unsent part of the message will be lost.

**3.05** At end-of-tape, the TS relay will be released to stop transmission in the normal manner.

**3.06** The "quiet" feature acts to halt TSC polls when all stations are in a no-tape condition.

**3.07** The "quiet" code FIGS QS LTRS is transmitted once in each search cycle.

**3.08** When FIGS QS LTRS is received, the function bars and levers in slots 21, 22, and 23 will operate in sequence and close the normally open contact over slot 23.

**3.09** If tape is now placed in the TD, the TS relay will operate to start the transmitter.

**3.10** This tape should be perforated with four or five LTRS characters ahead of the regular message format.

**3.11** The first two or three of the LTRS will be transmitted after which the function bar and lever in slot 24 will operate to open the normally closed contact and unlock the TS relay which will stop transmission.

**3.12** The first space pulse transmitted will have reactivated the TSC circuit which will now begin to poll and furnish a transmitter start in the usual manner.

**3.13** Line "hits" or tape available at any other station will also activate the TSC search circuit.

**3.14** If, for emergency reasons, it is necessary to start a transmitter manually, it can be done as follows.

(a) Place tape in gate. The tape should have four or five LTRS preceding the regular message format.

(b) Operate the K-KT-T switch to the K position. (K- Keyboard, T- Tape).

(c) Observe that the circuit is idle (dark BUSY lamp).

(d) Operate the LINE-TEST key to TEST.

(e) Type the desired TSC (FIGS \* S LTRS).

(f) As soon as the transmitter starts, restore the LINE-TEST key to LINE. This key change must be made immediately after the transmitter starts as too long a delay might result in transmission of address while still in TEST position, with the resultant loss of the message.

### 4. TESTS

**4.01** If possible, tests should be made in out-of-service hours. If tests are made during service hours, a slow traffic period is essential to observe operation of the "quiet" feature.

**4.02** Transmission measurements should be made by the Serving Test Center (STC) on all transmissions to and from the station under test.

- 4.03** A sufficient number of tests shall be made to insure satisfactory operation. In the event of locating and clearing any trouble, all tests should be repeated on that equipment affected and special attention given to prevent a recurrence.
- 4.04** To test the automatic transmitter start and "quiet" features, ascertain the TSC for the station under test, and that its stuntbox is equipped for the "quiet" code.
- 4.05** With tape available, observe that the transmitter starts only on receipt of the proper TSC and that the transmitter stops at the end-of-tape.
- 4.06** Simulate a taut or tangled tape condition and note that it stops the transmitter.
- 4.07** After correction of the taut or tangled "tape" condition, the tape should be reinserted to await a new sequential transmitter start. Then proceed as follows.
- Ascertain that a "quiet" condition prevails.
  - Place a tape in the transmitter. This tape should have four or five LTRS characters perforated ahead of the normal message format.
  - Observe that transmission starts immediately but that only two or three of the LTRS are transmitted when transmission is halted.
  - Check for a restart of the TSC circuit and a subsequent transmitter start for the available tape.
- 4.08** The tests for emergency operation (manual transmitter start) are the same as the procedure covered in 3.14. The STC should be checked on this operation to assure that the transmission occurs satisfactorily.
- 4.09** To make tests locally, proceed as follows.
- Operate the LINE-TEST key to the TEST position.
  - Operate the K-KT-T key to the K position.
  - Place a tape in the transmitter and type the station's TSC code (FIGS \* S LTRS).
- This should result in a transmitter start followed by an automatic stop at end-of-tape through the sixth pin.
- 4.10** To test the "quiet" feature:
- Place a tape in the transmitter. The first four or five characters should be LTRS.
  - Type the "quiet" code (FIGS QS LTRS).
  - Two or three of the LTRS characters should be transmitted, followed by halting of the transmitter.
  - The "quiet" condition is now simulated, followed by tape available.
  - Typing of the station's TSC will now result in a transmitter start.
- 4.11** Clearance of a taut or tangled tape condition can be tested as follows.
- While transmitting tape, operate from the RUN to the STOP position the three position transmitter switch (FREE WHEELING-STOP-RUN).
  - The transmitter will stop. A restart cannot now be effected unless FIGS H is typed before a new TSC.
  - Observe that in actual operation, if a transmission were halted as above for a jammed "tape" condition, that part which had been transmitted is lost and the tape must be restarted in the gate.
- 4.12** For a test of the receiving unit and its associated stuntbox operation proceed as follows.
- Type the station's CDC (FIGS H LTRS).
  - The receiving unit should now be in the "print" condition and any typing or transmitter operation will be copied.
  - To deactivate the receiving unit, type FIGS H LTRS.
- 4.13** When tests are completed, restore keys to the LINE and T positions.

5. REFERENCES

5.01 The following are sections and drawings related to this section.

AA128.006 — List of General Requirement Sections

AA286.021 — WSU for Telegraph Subscriber Lines

AA286.031 — 128B2 Teletypewriter Subscriber Set

AA286.039 — 130B1 Teletypewriter Subscriber Set

EA-10669 — SCATS Control Circuit

EA-10720 — SCATS MXD Control Circuit

*Note:* For information on basic 28-type teletypewriter apparatus, refer to standard instructions covering the particular components needed.