85A1 AND 85A2 DATA SELECTIVE CALLING SERVICE

SYSTEM

MAINTENANCE

1. GENERAL

1.01 The maintenance requirements of the 85A-type Data Selective Calling Service are determined by the maintenance requirements of the individual stations or units that are used to provide the 85A1 and 85A2 Service. Figure 1 shows a typical system block diagram of the 85A-type Data Selective Calling Service, hereafter referred to as the 85A-type system.

1.02 This section is reissued to provide coverage of the 85A2 Data Selective Calling Service (DSCS). Coverage of the 85A1 DSCS is retained. The 85A1 and 85A2 DSCSs are hereafter referred to, collectively, as the 85A-type DSCS. Change arrows have been omitted due to extensive changes to provide coverage of the 85A2 DSCS.

1.03 Some of the items that make up individual stations do require routine or periodic maintenance. Teletypewriters (TTYs) require routine servicing, depending on the amount and rate at which they are used. This servicing must be performed in accordance with the applicable Field Maintenance Practices (FMPs) or BSPs which give the necessary checks and adjustments required to ensure that the equipment will function properly.

1.04 No routine maintenance is required or performed on the 85A-type system as a whole; however, in order to restore service or locate defective equipment, a system test or tests can be performed to verify which parts of the system may be causing a trouble condition. Overall system tests are used since they provide testing before dispatch trouble clearing procedures.

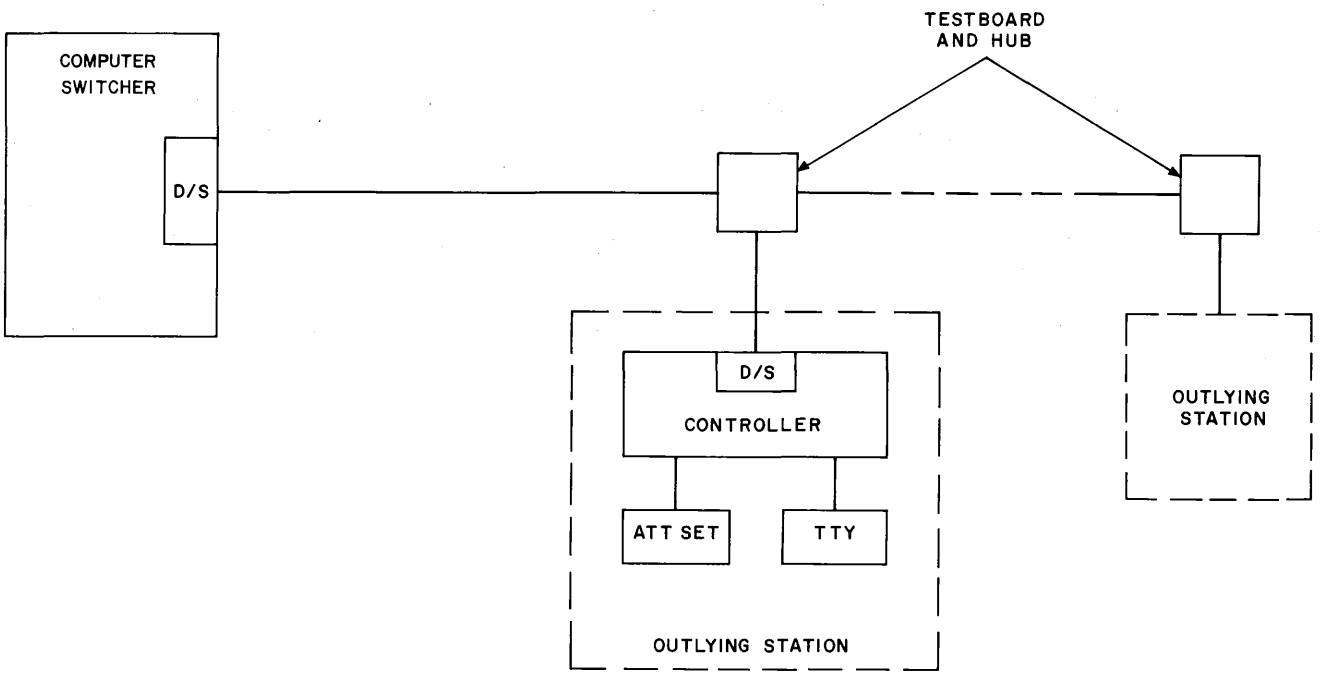

Fig. 1—85A-Type Data Selective Calling Service—System Block Diagram

2. MAINTENANCE PROCEDURES

General

2.01 The testing required to perform maintenance on an 85A-type system is made by and under control of the serving test center (STC).

2.02 Before performing routine maintenance or making maintenance tests on an 85A-type station, the STC and customer must release the station for maintenance work. This release can be obtained from the STC or by having the customer send a service message (see 2.18 through 2.20).

> ***Note:*** No routine maintenance of the outlying station controller is required with the exception of the clock. Due to aging of the clock, periodic checking and adjusting may be required.

Trouble Locating Procedure

2.03 The STC is informed that a trouble condition exists when it receives the trouble report. The trouble clearing procedure is then initiated. A suggested systematic approach to locating and clearing a trouble condition is given in Fig. 2.

2.04 The trouble locating procedure block diagram provides a logical sequence of operation to aid in locating a trouble condition. The blocks of Fig. 2 have been numbered for ease of reference in the following text. These numbers are for reference only and are in no way connected with the sequence of tests or a suggested order of operation. Refer to Fig. 2 in connection with the following text.

2.05 When a trouble report is received by the STC (blocks 1 and 2), it is first analyzed to determine, if possible, the cause of the trouble. Before any testing procedures or repairs are initiated, the station or stations involved must be released for maintenance. If the trouble is evident from the trouble report, a craft employee should be dispatched to make the necessary repairs and return the station to service (blocks 3 and 4). In most cases, however, it will be impossible to determine the cause of the trouble from the trouble ticket.

2.06 When the source of the trouble condition is not determined from an analysis of the trouble ticket, it becomes necessary to determine if the trouble is limited to one station or if multiple stations are in trouble (block 5). If only a single station is in trouble, proceed to block 12 for the necessary tests to locate the trouble condition. When more than one station is experiencing trouble, the condition may be originating in a hub and, therefore affecting more than one station.

2.07 After determining that more than one station is in trouble, the hub that is common to the stations in trouble should be monitored or checked for incoming and outgoing errors (block 6). When no errors are detected at the hub and station operation is normal, the trouble can be considered to have "come clear." When errors are found at the hub, it must be determined whether the errors are coming in from a station connected to the hub or are the result of errors received from the intertoll facilities (block 7). If the errors are being received from a station connected to the hub, proceed to block 12 and perform the test indicated to locate and clear the trouble. When the errors are received from the intertoll facilities, the additional tests outlined by block 8 will have to be made.

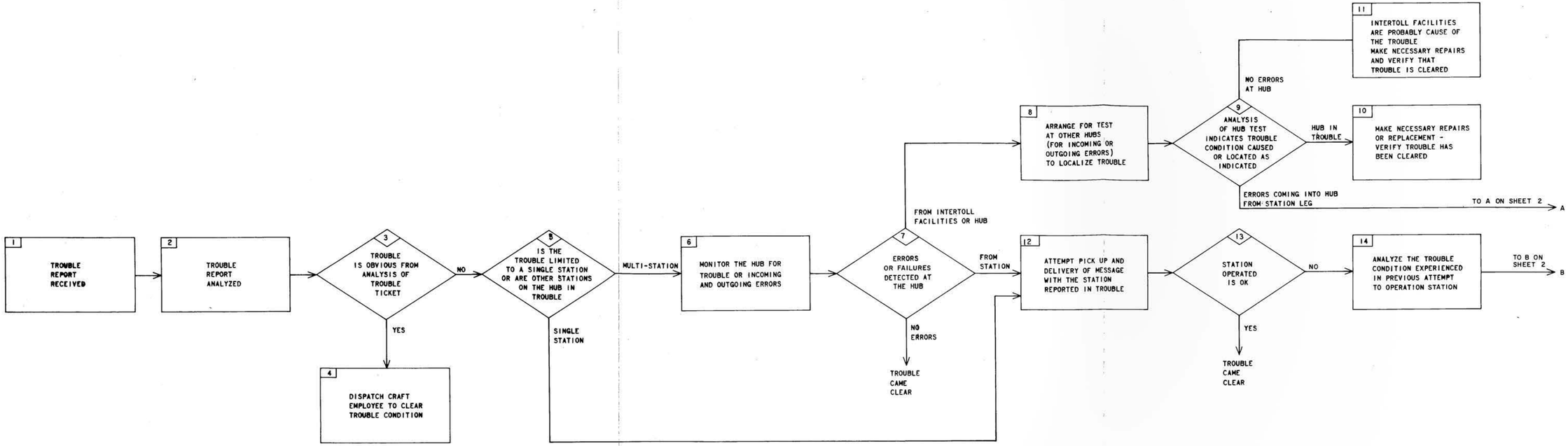

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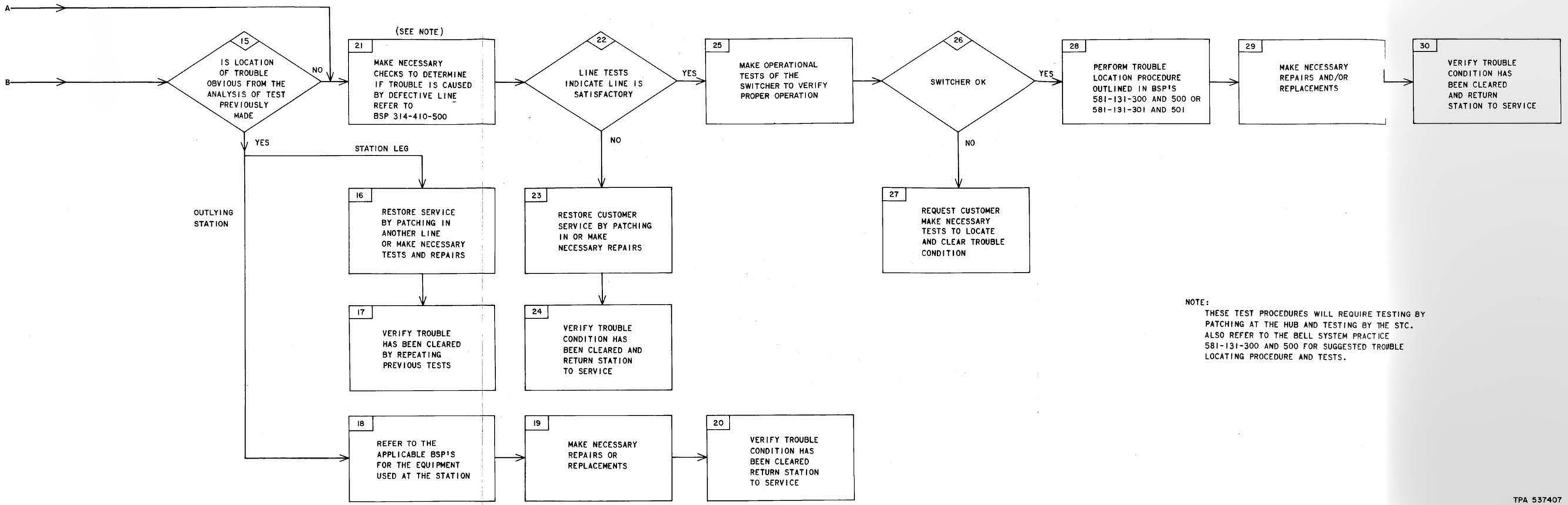
Fig. 2—85A-Type Data Selective Calling Service—Trouble Locating Procedure (Sheet 1 of 2)



NOTE:
THESE TEST PROCEDURES WILL REQUIRE TESTING BY PATCHING AT THE HUB AND TESTING BY THE STC. ALSO REFER TO THE BELL SYSTEM PRACTICE 581-131-300 AND 500 FOR SUGGESTED TROUBLE LOCATING PROCEDURE AND TESTS.

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Fig. 2—85A-Type Data Selective Calling Service—Trouble Locating Procedure (Sheet 2 of 2)

2.08 When errors are received from intertoll facilities, these facilities and their associated hubs must be monitored or tested for errors (block 8). An analysis of these tests should be made to determine if the errors are coming into a hub from a station leg, if the hub itself is in trouble, or if the intertoll facilities are causing the trouble condition (block 9).

2.09 When the trouble is originating from a station leg, the required tests indicated by block 23 should be made to aid in locating and clearing the trouble condition. If analysis of the previously performed tests indicates that the hub is in trouble, make the necessary repairs or patch in a hub to restore customer service, and verify that the trouble condition is cleared by repeating the previous tests (block 10). When no errors are detected at the connecting hub and errors are still present at the previously tested hub, the intertoll facilities should be suspected of causing the trouble. In this case, the necessary repairs will have to be made or another line can be patched in to provide service (block 11). Perform the necessary test to verify that the trouble condition has been cleared.

2.10 When previous tests indicate that trouble is being received from or caused by an outlying station, an attempt to operate that station should be made (block 12). This station test should include polling for traffic status, an attempt to pick up traffic, message transmission, message reception, and response to roll call. The station can also be tested by placing it in the loop-back mode and operating the station.

Caution: A station equipped with the Data Set 109A-type MUST NOT be put into the loop-back mode.

2.11 When the preceding tests indicate that the station is operating properly, the trouble may have "come clear." An analysis of the trouble experienced when attempting to operate the station should be made to indicate the cause of any trouble experienced (blocks 13 and 14). In some cases, it will be possible to isolate the trouble or verify that the trouble condition is caused by either the station leg or the outlying station. When the trouble cannot be located from an analysis of the test, additional testing as indicated by block 21 will be required to isolate the trouble condition (blocks 15 through 17).

2.12 When the trouble experienced indicates that the outlying station is in trouble (block 15), it will be necessary to dispatch a craft employee to make the necessary tests, repairs, and/or replacements and verify that the trouble has been cleared (blocks 18 through 20).

2.13 In cases where it can be determined that the line is causing the trouble condition, restore customer service by patching in another line or by making the necessary tests and repairs (block 16). Verify that the trouble has been cleared before returning the station to service (block 17).

2.14 In order to isolate the trouble condition, a test of any suspected line or intertoll facilities should be made to verify that these facilities are working properly (block 21). When the line is defective, restore service to the customer by patching in another line or making the necessary repairs and/or adjustments (blocks 22 and 23). Before returning the system to service, make the necessary tests to verify that the trouble condition has been cleared (block 24).

2.15 When the line is acceptable, a test of the switcher should be made to verify that the station is operating properly (blocks 25 through 27). When the switcher operation is acceptable, additional testing of the outlying station may be required as indicated by block 28.

2.16 When testing indicates that the switcher is in trouble, request that the customer make the necessary tests to locate and clear the trouble condition (block 27).

2.17 When a station is in trouble, perform the tests outlined in the Bell System Practices entitled 85A1 Data Selective Calling Service Stations—100-Word Per Minute Half-Duplex Operation—Maintenance (581-131-300), or 85A2 Data Selective Calling Service Stations—150-Word Per Minute Half-Duplex Operation—Maintenance (581-131-301); 85A1 Data Selective Calling Service Stations—100-Word Per Minute Half-Duplex Operation—Test Procedures (581-131-500), or 85A2 Data Selective Calling Service Stations—150-Word Per Minute Half-Duplex Operation—Test Procedures (581-131-501). Make the necessary replacement and/or repairs (blocks 28 and 29). Verify that the trouble condition has been cleared and return the station to service (block 30).

Release and Removal of a Station for Routine TTY Maintenance

2.18 When the TTY or other associated equipment requires routine maintenance, the station must be released to allow the maintenance work to be performed. The release may be obtained from the STC or by having the customer send a service message. If the release-obtained-by-service message procedure is agreed to by the customer, out-of-service time is reduced. This method is not applicable to TERM ONLY stations. The craft employee will request that the customer place the station on skip and advise all other stations on the circuit that the station being routined will be off the circuit until further notice. No work should be performed until the request is acknowledged from the switcher.

Tests Following Maintenance

2.19 The following tests can be performed to verify operation of the outlying station following maintenance of the station. This is a suggested list of tests, and it is not mandatory that all of these tests be performed all of the time. In general, the station should be checked to verify that it can send and receive, that the TD is operative, and the various contacts (eg, paper, tape, etc) are operative. In addition, the following checks can also be made when necessary or applicable:

(a) Receiving machine tolerance, including reperforators, after connecting on valid code and replying with an ACK answer-back

(b) Reply to call-in when not ready for various reasons

(c) Check of emergency stop operation

(d) Receiving machine connecting on valid individual codes and disconnecting on ETX EOT code

(e) Receiving machine not connecting on invalid code or sending ACK answer-back

(f) Transmitter starting on receipt of regular station polling code (SPC) if tape has been inserted; stapping after sending in the complete heading, and turning off on EOT code at the end of the message

(g) Transmitter without tape responding with a NAK answer-back upon receipt of a DLE SPC

(h) Transmitter not starting on an invalid DLE SPC

(i) Sending transmitter stopping if line goes open while sending either the heading or text in HDX

(j) Operation of auxiliary features, such as station alarms, key operations, lamp operations, etc.

2.20 Verify that the station is operating properly before it is returned to service. This can be accomplished by either performing the previous tests or actually operating the station.