N3 CARRIER TELEPHONE SYSTEM

OVERALL SYSTEM

INITIAL LINEUP AND MAINTENANCE TESTS

1. GENERAL

1.01 This section covers the operating instructions for initial lineup and maintenance tests on the terminal equipment, carrier supply, and high-frequency line of the N3 Carrier Telephone System.

1.02 This section is reissued to add information to paragraphs 2.03 and 3.01. Arrows are used to indicate changes. This reissue does not affect the Equipment Test List.

1.03 The information in this section is intended to be used after the terminal, carrier supply, and repeater equipment have been installed and the equipment and line facilities are ready for the tests and adjustments preparatory to placing the carrier system in service. The information also applies to the operation and maintenance of the system while it is in service.

1.04 The extended application of direct distance dialing and operation of the related signaling equipment emphasize the necessity for closely following operating procedures. This will reduce to a minimum the number of circuit interruptions and irregularities which affect the operation of the signaling equipment. The necessity of applying testing and operating procedures without omitting any steps is important in order to avoid irregularities which are likely to result from the use of abbreviated or unauthorized procedures.

1.05 Where direct distance dialing is in operation on the trunks working over the system, it is necessary that precautions be taken to avoid false operation of switching equipment, cutoffs, and wrong numbers. When a system or a channel is taken out of service, the associated trunks should be made busy to traffic at the secondary testboard, or its equivalent, at each end of the trunk.

Note: Caution should be exercised to avoid causing hits on systems carrying SAGE, data, or telegraph transmission.

1.06 Testing and switching apparatus should be calibrated and maintained in accordance with standard instructions in the 103 division of Bell System Practices. The calibration of testing apparatus is important since failure to meet test requirements may be due to errors caused by defective testing apparatus. Testing apparatus should be calibrated at such intervals as is necessary to ensure accuracy of measurement.

1.07 Note particularly that all maintenance sections of this series specify the use of test probes per KS-14510, List 8 or connector plugs per KS-19531, List 2 for use in obtaining access to test points on the face of all N3 plug-in units. Use of these connector plugs and probes minimizes the danger of mechanical damage to the test point and avoids the possibility of accidentally shorting the test point potential to chassis ground. Previously specified test probes and connectors are prone to these hazards and their use should be avoided.

2. INITIAL TESTS

2.01 Initial tests include those tests which are made on the cable facilities, testing apparatus, power supply, and order wire and alarm circuits to determine that all facilities will meet their individual requirements prior to the system lineup procedure.

2.02 Details regarding initial tests are not included in this section, but are covered by other instructions applying to the specific project and prepared by the operating company. Initial tests may include such items as follows:

(a) ***Cable Tests:*** Tests of resistance and resistance unbalance and tests for conductor turnover, crosstalk, high-frequency attenuation, and noise measurements on the cable facilities.

(b) ***Testing Apparatus:*** Tests and calibrations as recommended for the various test sets.

(c) ***Power Supply:*** Tests of power supplies at terminal and repeater power supply points.

(d) ***Order-Wire and Alarm Circuits:*** After the order-wire and alarm circuits at the terminals and repeaters have been connected to the line conductors and adjusted in accordance with circuit information, initial tests should be made for transmission and signaling features of the order wire. Operations associated with the alarm circuit should be checked to ensure that the alarms are properly received at each of the stations where receiving equipment is located.

2.03 The following initial steps should be taken to reduce delays in lineup procedures:

(a) Circuit layout or equivalent information should be available showing the following data:

(1) Cable pair assignments.

(2) Span-pad ▶and equalizer network◀ values.

(3) Voltage and resistor values at points feeding dc power to remote repeaters.

(4) Types of repeaters: N1, N1A ▶N1-H, or N2.◀

(5) Repeater slope adjustments.

(6) Design noise requirement if other than the standard requirement.

(7) ▶Use of 240-type transistorized flat-gain amplifiers in the high-frequency line between repeaters and between a terminal and a repeater.◀

(b) Repeater mounting brackets should be in place and the span pads ▶and equalizer networks◀ should be installed in the mountings or in cross-connecting cabinets as required.

(c) Check should be made to verify that the cable protector blocks are in place and that heat coils are removed and strapped out of these cable terminals arranged for heat coils. System lineup and application to service should be carried out as called for in system and circuit order information in accordance with instructions in this section.

3. MAINTENANCE TESTS

3.01 Periodic tests are made on the terminal and high-frequency line to detect apparatus which has developed trouble or has aged to the point where, if it remained in service, it might cause impairment to service. These tests also indicate variations in the high-frequency line which need corrective measures. Maintenance tests are covered in the appropriate sections of this series ▶and periodicity is given in the Equipment Test List (ETL).◀