TYPE O AND ON CARRIER TELEPHONE SYSTEMS
TERMINALS AND JUNCTIONS
GENERAL INFORMATION
INITIAL LINE-UP AND MAINTENANCE TESTS

CONTENTS PAGE

1. GENERAL

1.01 This section describes the operating instructions for initial line-up and maintenance tests on the terminal and junction equipment of the O and ON carrier telephone systems.

1.02 This section is reissued to add heater supply fuse information, to add periodic maintenance tests, and to change certain test intervals. Due to the general revision, marginal arrows usually used to denote changes have been omitted.

1.03 This information is intended to be used after the terminals, junction, 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. Information is also included for the operation and maintenance of the system while it is in service.

1.04 The increasing sensitivity of present day traffic to hits and interruptions emphasizes the necessity for closely following operating procedures which reduce to a minimum the number of circuit interruptions and irregularities which affect the operation of the circuits. The necessity of applying test 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 Circuits assigned to the carrier channels should be made busy or patched out before attempting tests and adjustments which may cause service interruptions.

> ***Caution: All work operations on an in-service basis should be performed carefully to avoid hits or service interruptions. The trunks or special service circuits associated with the carrier system may be carrying DATA-PHONE, SAGE, voice-frequency telegraph, or other data service.***

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

1.07 The heater supply fuse at the terminal has been changed from 2 amperes to 3 amperes, and the dot beside it has been changed to blue on an AR basis. A heater supply fuse (lower left-hand fuse on the fuse panel) that blows is replaced with a ***3-ampere*** fuse and not a 2-ampere fuse, since a 2-ampere fuse usually will blow on the initial surge of heater current.

2. INITIAL TESTS

2.01 Initial tests include those tests which are made on the cable facilities, testing apparatus, power supply, order wires, alarm circuits, terminals, junctions, and repeaters prior to the initial line-up.

2.02 Details regarding all initial tests are not included in this section but should be included in instructions applying to the specific project and prepared by the Operating Company. Initial tests may include such items as:

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

(b) ***Testing Apparatus:*** Make tests and calibrations for the test sets in accordance with the Bell System Practices.

(c) ***Power Supply:*** Make tests of power supply at repeater power supply points as covered in Bell System Practices.

(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, check the transmission and signaling features of the order wire. Check the operations associated with the alarm circuit to ensure that the alarms are properly received at the station at which the receiving equipment is located.

(e) ***Terminals — Preliminary Tests:*** Make terminal preparation and placement tests in accordance with Section 362-105-501.

(f) ***Junctions — Preliminary Tests:*** Make junction preparation and placement tests in accordance with Section 362-105-502.

(g) ***Repeaters — Preliminary Tests:*** Make repeater preparation and placement tests in accordance with Section 362-200-300 for O repeaters or Section 362-400-300 for ON repeaters.

2.03 The following additional initial steps should be taken to reduce delays in line-up procedures.

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

(a) Cable pair assignments.

(b) Span pad and artificial line values.

(c) Resistor value at dc power supply points.

(d) Type of repeater.

(e) Slope settings.

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

(2) Repeater mounting brackets should be in place and the span pads, artificial lines, and noise control units, as required, should be wired to the cable terminals.

(3) Check that the cable protector blocks are in place.

2.04 ***System Line-Up:*** The tests covered in the following sections should be made when a system is first lined up terminal to terminal. The section to be used will depend upon the type of system being tested.

362-145-501 — O Carrier Terminals — Group and Twin Channel Units

362-145-502 — ON Carrier Terminals — Group and Twin Channel Units

362-145-503 — ON1 Junctions — Groups connected to OA, OB, OC, and OD Carriers

362-105-503 — Check of Alarm Operation

2.05 ***Overall Channel Line-Up:*** Each channel should be lined up in each direction of transmission before a system is placed in service. The section to be used will depend upon the type of system and channel being tested.

362-335-501 — O and ON Carrier — Message Channel Unit

362-335-502 — O and ON Carrier — Channel Unit without Signaling (J98705AS)

362-335-503 — On and ON Carrier — Thru Channel Unit (J98705AF)

362-335-504 — O and ON Carrier — Special Services Channel Units (J98705AP)

362-335-505 — O and ON Carrier — Schedule C and D Program Channel

3. MAINTENANCE TESTS

3.01 The tests listed in Table A are made on a periodic basis to detect apparatus which has developed trouble or has aged to the point where service might be impaired if the apparatus remained in service. Also, the tests will indicate variations in the high-frequency line which need corrective measures. The testing intervals are abbreviated as follows:

3M = 3 Months
6M = 6 Months
A = Annual

3.02 The tests listed in Table B should be made when electron tubes are replaced in the various units. The new tube should then be tested in accordance with Section 362-110-503.

3.03 The tests listed in Table C should be made when various plug-in units are replaced.

TABLE A
PERIODIC MAINTENANCE TESTS

TEST	TEST PERIOD	SECTION REFERENCE
TERMINALS		
Tube Tests	6M	362-110-503
Filament Voltage	6M	362-110-501
76-KC Level Control	6M	362-130-503
Channel Units		
Message Output		
Unit With and Without Signaling	3M	362-115-502
Thru Channel Unit	3M	362-335-503
Special Service Unit (Channel Unit Output)	3M	362-315-501
Schedules C and D Program Unit (1000-Cycle T Potentiometer Adjustment)	3M	362-320-501
Expandor Output		
Unit With and Without Signaling	3M	362-305-501
Schedules C and D Program Unit	3M	362-320-501
Channel Noise (Except Impulse Noise)	6M	362-305-510
Overall Pulsing Test		
Unit With Signaling (Dial Signaling Channels Only)	3M	362-305-515
Group and Twin Channel Units		
3700-Cycle Oscillator Output Level, Frequency and Waveform	6M	362-130-501
Group Oscillator Output Level and Frequency	6M	362-130-501
Group Transmitting Unit Output	6M	362-130-502
Group Receiving Unit Output	3M	362-135-501
Twin Channel Oscillator Output Level and Frequency	6M	362-120-501
ON2 Failure Alarm Circuit	A	362-125-501

TABLE A (Cont)

TEST	TEST PERIOD	SECTION REFERENCE
JUNCTIONS		
Tube Tests	6M	362-110-503
Filament Voltage	6M	362-110-502
Group Oscillator Output Level and Frequency (OW)	6M	362-130-501
Group Oscillator Output Level and Frequency (CA)	6M	362-130-501
Group Transmitting Unit Outputs (Open Wire and Cable)	6M	362-140-501
Group Receiving Unit Outputs (Open Wire and Cable)	3M	362-140-501

TABLE B
TESTS REQUIRED WHEN ELECTRON TUBES REPLACED

COMPONENT	TUBE REPLACED	SECTION REFERENCE
Channel Unit		
Compressor	Any	362-115-501
Carrier Subassembly	Any	362-305-501
Expandor	Any	362-305-501
		362-305-510
		362-305-512
Signal Receiver Circuit	Any	362-305-515
Twin Channel Unit		
Oscillator	Any	362-120-501
Receiver Circuit	Regulator	362-125-501
	Amplifier	362-125-501
Group Unit		
Oscillator Unit Level and Frequency	Carr H, Carr L	362-130-501
Level, Frequency, and Wave Shape	3700 Osc	362-130-501
Transmitting Unit — Terminals	Any	362-130-502
— Junctions	Any	362-140-501
76-KC Level Control Oscillator	Any	362-130-503
Receiving Unit — Terminals	Any	362-135-501
— Junctions	Any	362-140-501

TABLE C

TESTS REQUIRED WHEN PLUG-IN UNITS REPLACED

UNIT REPLACED	TEST TO BE MADE	SECTION REFERENCE
Channel Unit	All channel unit tests should be made at both terminals.	362-110-503 362-115-501 362-115-502 362-305-501 362-305-510 362-305-512 362-305-515
Twin Channel Unit	All Twin Channel Unit Tests	362-110-503 362-120-501 362-125-501
Group Transmitting Unit	Tubes and Output	362-110-503 362-130-502 362-140-501
Group Oscillator Unit	All	362-110-503 362-130-501
Group Receiving Unit	Tubes and Output	362-110-503 362-135-501 362-140-501