TELEGRAPH LOOPS

TESTING DC LOOPS EQUIPPED WITH CONTINUITY INDICATORS

1. GENERAL

1.01 This section provides information for testing DC telegraph loops equipped with continuity indicators, as covered in Section 460-110-101.

1.02 The indicator provides the STC with a simple means of testing, without the need for personnel at the customer location, to determine whether a DC telegraph loop trouble condition is caused by the equipment or the conductors.

2. DC TELEGRAPH LOOP CONTINUITY INDICATOR

2.01 Indicators for use on neutral and polar loops are shown in Fig. 1 and 2, respectively. In both cases, R1 is 100,000 ohms.

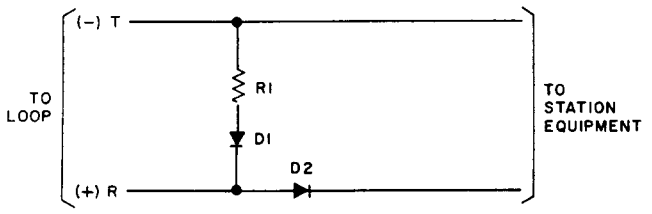

Fig. 1—Neutral Operation

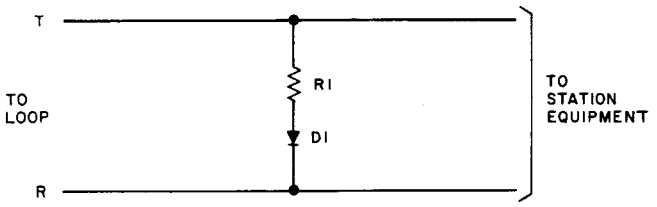

Fig. 2—Polar Operation

2.02 The results obtained when reading through the 100,000-ohm resistor will vary, depending on the resistance of the meter used. The meters provided with the DOTC (Data Observing Test Center) and No. 2 facility positions are 160,000 ohms, while those in No. 9 TLT boards are 15,000 ohms. If the SHUNT key is operated on DOTC and No. 2 boards, the 80-volt reading will drop to zero. Since these are the most commonly provided meters, the tables attached indicate the expected reading with these meters. Slight variations caused by battery voltage and loop resistance are normal. Other types of meters will also result in deviations from the values shown.

3. TEST PROCEDURE

3.01 It is assumed that the circuit has been checked and that the trouble locates towards the loop. Since an open to the station equipment may be caused by either an open or shorted loop, both conditions should be checked. To determine whether the loop conductors or the station equipment are at fault, proceed with tests in accordance with Tables A and B.

3.02 A loop can be tested using a KS-14510 volt-ohm-milliammeter (or equivalent) by measuring the resistance of the circuit as indicated in Table C and disregarding capacity kicks. The test for shorted loops applies to neutral operation only.

TABLE A

TEST FOR OPEN LOOP, NEUTRAL AND POLAR OPERATION

POSITION METER	METER INDICATION		
	OPEN IN LOOP	OPEN IN STATION	
		DOTC OR NO. 2 BOARD	NO. 9 BOARD
Arrange for testing shorts with negative potential on the tip of cord.	0	0	0
Change potential on tip from negative to positive.	0	80 volts (See Note)	17 volts

Note: Do not operate SHUNT key.

TABLE B

TESTS FOR SHORTED LOOP, NEUTRAL OPERATION ONLY

POSITION METER	METER INDICATION		
	LOOP SHORTED	LOOP NORMAL	
		DOTC OR NO. 2 BOARD	NO. 9 BOARD
Arrange for testing shorts with negative potential on the tip of cord.	130 volts	130 volts	130 volts
Change potential on tip from negative to positive.	130 volts	80 volts (See Note)	17 volts

Note: Do not operate SHUNT key.

TABLE C

TESTS FOR SHORTED LOOP, NEUTRAL OPERATION ONLY USING KS-14510 VOLT-OHM-MILLIAMMETER

KS-14510 (OR EQUIVALENT)	METER INDICATION			
	OPEN IN LOOP	OPEN IN STATION	LOOP SHORTED	LOOP NORMAL
Arrange for measuring resistance with V- -A lead on tip and COM lead on ring of loop.	No Indication	No Indication	Resistance to Short	Resistance of Loop and Station
Reverse connection, COM lead on tip and V- -A lead on ring.	No Indication	100,000 ohms plus Resistance of Loop	Resistance to Short	100,000 ohms plus Resistance of Loop