BELL SYSTEM PRACTICES
Outside Plant Construction and Maintenance

SECTION G63.262.1
Issue 1, April, 1952
AT&T Co Standard

ELECTROLYSIS TESTING
ROUTINE—BURIED

Contents **Page**

1. GENERAL

1.01 This section describes the procedures to be followed in making routine electrolysis tests on buried cables.

1.02 Buried cable is, in general, installed in open country remote from trolley systems or other equipment using direct current. In view of this, a limited number of tests along the cable route are usually adequate. The location of the test points is given in another section.

1.03 The detailed information given in the section on routine electrolysis testing of underground cable on the use of meters for current and potential measurements, etc., should be followed where applicable.

2. FREQUENCY OF TESTS

2.01 Routine electrolysis tests of buried cables shall be made annually, preferably in the spring, to detect any unsatisfactory electrolytic conditions that may have developed through changes in the telephone plant or other buried structure in the area.

2.02 Routine tests shall not be made when the ground is frozen since the readings are not likely to give an indication of electrolysis condition.

3. TESTING PROCEDURE

3.01 Test leads are made available above ground at electrolysis test points and a test of the current along the cable can be made by connecting a millivolt meter to the two leads from the cable and using a suitable scale of the meter. It is important to note the designations of the leads which indicate the relative direction in which they are connected to the cable. For the sake of uniformity it is desirable that the positive post of the millivolt meter be connected to the east or north test lead at each point when making a test of the current flow.

3.02 A measurement of the voltage to ground may be made by connecting the test lead from the cable to the positive post of the voltmeter and connecting the negative post to the ground lead. When a high sensitivity type voltmeter is used for this test, the use of scales lower than 0.5 volt (as indicated in Paragraph 4.02) should be avoided because of possible interference with the reading due to varying contact potentials.

3.03 Tests of the voltage to ground may also be made at gas pressure valves and similar connections to the cable, by connecting the positive post of the voltmeter to the valve or other contact and connecting the negative post to the ground electrode as above.

3.04 Measurements of the voltage between the cable and other buried structures can be obtained by connecting the positive post of the voltmeter to the cable, and the negative post to the other structure in the usual manner.

3.05 Sufficient care should be taken in making the various measurements to note any significant simultaneous effects in the various readings, such as might occur where the location is within the influence of a direct current railway system or other sources of stray direct current. It may be necessary to use more than one meter at some locations to note these effects. Recording meters can also be used for this purpose.

3.06 The observation of any one reading should be continued over a sufficient period of time to note possible significant variations. The use of recording meters will assist in determining the extent to which such variations might be expected.

4. DATA TO BE OBTAINED

4.01 Information regarding current, potential and resistance measurements shall be recorded on Form E-1110 or similar type form.

4.02 Voltage from the cable to ground should be obtained at regular test points and at other points where suitable contact with the cable can be made. Also, voltage from the cable to buried metallic structures located in the vicinity should be obtained at these points.

4.03 Test of the current on the cable sheath should be made at all test points where the proper connections for this test are in place. It is important to record the direction of this current flow.

4.04 Record should be made of any significant simultaneous effects in any of the measurements.

4.05 Where fluctuations in the readings occur, maximum and minimum values, or the maximum positive and the maximum negative values should be recorded.

4.06 The record of the test should include notations of any general condition which the tester may consider as possibly affecting the electrolysis condition of the cable, such as the condition of the soil adajcent to the cable (whether dry or moist, loose or well packed, clay or sand, etc.), relative elevations, and similar items.