BELL SYSTEM PRACTICES
Outside Plant Construction and Maintenance

SECTION G63.210.1
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AT&T Co Standard

ELECTROLYSIS TESTING
INITIAL TESTS—NEW INSTALLATIONS

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1. GENERAL

1.01 This section outlines the procedures to be followed in conducting initial inspections and tests on new installations of underground cable in conduit as well as buried cable for the purpose of determining general electrolysis conditions.

2. PRELIMINARY INSPECTIONS

2.01 A preliminary inspection shall be made preferably before an underground or buried cable is to be installed along a new route in order to determine if the use of corrosion protected cable is warranted.

2.02 The preliminary inspection consists of obtaining data in regard to the location of electric (d-c) railways, power houses, tunnels and mines or other equipment operated by direct current, forced drainage installations on foreign pipe lines and cables and information on other underground structures, etc., in the territory through which the cable will extend. These data will be of valuable aid in connection with later electrolysis investigations.

3. INITIAL TESTS ON CABLE IN NEW CONDUIT

3.01 Initial tests on the first cable placed in a new conduit run should be made soon after completion of splicing, in order to determine whether any unsatisfactory electrolysis

conditions exist and whether special mitigative measures should be taken to prevent corrosion of the sheath. Should a potentially hazardous condition be known to exist along any new cable route, it may be desirable to make the initial tests on a part of the cable prior to completion of all splicing on the job.

3.02 Whenever serious electrolytic conditions are indicated during the initial tests, such as excessive currents or voltages on the cables, an immediate report shall be made to the supervisor in charge of electrolysis mitigation in order that temporary remedial measures may be undertaken promptly.

3.03 Initial tests on bare lead cable in new conduit should include measurements of the potential of the cable to earth, to other substructures, to the rail and current flow on the sheath. If the results indicate a test slug to earth resistance high enough to cause an appreciable error in the readings, it will be desirable either to use a test meter with a high internal resistance to avoid inaccurate readings or to measure the slug to earth resistance and correct the reading accordingly.

3.04 Initial tests on cable with a polyethylene sheath or corrosion resistant covering in new conduit should be made as specified above, only in manholes where test leads or valve pipes are installed or where the lead sheath is exposed. Wherever possible, the sheath current should be determined. If the exposed sheath is not long enough or no current flow test points have been installed, the direction of current flow should be determined.

3.05 The initial cable in a new subway shall be tested in every manhole in the case of plain lead cable. The tests shall be made preferably under moisture conditions which are favorable to highest potentials with respect to earth. If the cable is submerged, sufficient water should be removed to bring the water level below the cable and the racks which support the cable.

3.06 In general, initial electrolysis tests on cable in new conduit shall be made employing similar testing procedures to those prescribed in the sections on routine electrolysis testing of cable in conduit. Frequent use shall be made of recording meters for determining potential conditions over a 24-hour period.

3.07 The following data shall be obtained and recorded in the appropriate column on Form E-1110 or similar type form.

Plain Lead Cable

(a) Current measurements shall be taken in millivolts in the described manner.

(b) Measurements of potential between cable and earth shall be taken simultaneously with the sheath current readings.

Corrosion Protected Cable

(c) Potential measurements between cable and earth shall be taken at all manholes provided with test leads (or valve pipes) or where the sheath is exposed, and current direction should be determined if practicable.

4. INITIAL TESTS ON CABLE IN EXISTING CONDUIT

4.01 Tests on new cables placed in existing conduit runs shall in general be made in connection with the next routine survey of that area. In some cases where known hazardous conditions exist, it may be desirable to make an earlier survey of the route prior to the next scheduled routine survey. Where a special survey is made, it should include those tests normally made on a routine survey for the particular type of cable involved.

4.02 The measurements prescribed in Paragraph 3.03 shall be obtained when corrosion protected cable is installed in conduit systems containing existing plain lead cable. These measurements shall be taken on the plain lead cable.

4.03 The measurements prescribed in Paragraph 3.03 shall be obtained when plain lead cable is installed in conduit systems containing only corrosion protected cable.

4.04 Where all the cables in a conduit system are polyethylene sheathed or corrosion protected, potential measurements between cable and earth shall be taken at all manholes provided with test leads (or valve pipes) or where the sheath is exposed.

5. INITIAL TESTS ON BURIED CABLE

5.01 Initial electrolysis tests shall be made on buried cable in accordance with instructions contained in the sections on routine electrolysis testing of buried cable.

6. RECORDS

6.01 Records in the form of graphs, maps, drawings, etc., shall be made and maintained by the personnel responsible for electrolysis testing, in such a manner as to facilitate the determination of the need for mitigative measures to protect telephone cables from electrolytic hazards.