ELECTROLYSIS TESTING

GENERAL

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1. GENERAL

1.01 This appendix outlines the responsibilities of the Electrolysis Supervisor in the performance of routine and special electrolysis surveys, installation of mitigative measures and other related work involved in maintaining the cable plant as free from electrolytic corrosion as practicable. It also specifies the preparation and maintenance of certain records and provides for the preparation and distribution of various reports.

1.02 The individual in the Plant Department to whom direct supervision of electrolysis work is assigned in the area for the purpose of this appendix, will be referred to as the Electrolysis Supervisor.

1.03 All correspondence originated by the Electrolysis Supervisor, relating to electrolysis problems and directed to an outside company, shall be written over the signature of the Superintendent of Construction and Plant Engineering. Copies of letters sent to or received from an outside company in this connection shall be forwarded to the General Plant Manager and Chief Engineer for their information.

1.04 The Chief Engineer will assist in handling specific problems involving special engineering consideration and in establishing and maintaining satisfactory relations with electric railway and other foreign companies.

2. RESPONSIBILITIES OF ELECTROLYSIS SUPERVISOR

2.01 The Electrolysis Supervisor shall conduct all initial surveys, subsequent routine surveys, special tests or investigations and routine tests and inspections of electrolysis switches and drainage wires throughout the area.

2.02 The Electrolysis Supervisor shall handle all negotiations with electric railway companies and shall represent the Telephone Company on all joint surveys and other cooperative electrolysis work involving foreign companies. Where situations requiring special engineering consideration are involved, or it is found that satisfactory cooperation is not being obtained from any foreign company, advice as to specific plans or methods of handling shall be secured from the Chief Engineer.

2.03 The Electrolysis Supervisor, with such assistance and advice as may be required from the Chief Engineer's office, shall arrange for the systematic interchange of information with electric railway companies and foreign cable and pipe owning companies regarding extensions or rearrangements of plant or changes in operating practices which influence the electrolysis situation. He shall establish and maintain cordial relations with such companies and shall cooperate fully in conducting special joint studies which are of mutual concern.

2.04 The Electrolysis Supervisor shall arrange for the prompt and thorough investigation of all cable failures which are or appear to be caused by electrolytic action.

2 05 The Electrolysis Supervisor shall analyze the results of routine surveys and drainage wire tests and shall maintain a record of all cable sections or areas in which there are potential sources of electrolysis trouble.

2.06 The Electrolysis Supervisor shall arrange for the installation of such remedial measures as may be necessary to correct hazardous electrolysis conditions which are found in connection with routine or special surveys or which are revealed by cable failures. Where the installation of mitigative measures is to be

made jointly by the Telephone Company and one or more other companies, the details of the proposed installation and division of cost shall be approved by the Chief Engineer's office before making definite commitments or arrangements for the installation. The details of all other proposed installations of mitigative measures shall also be discussed with the Chief Engineer's office before arranging for the work.

2.07 From the results of the analysis of initial or succeeding surveys and his knowledge of changes in conditions affecting electrolysis, the Electrolysis Supervisor shall determine the completeness of and interval between future routine surveys for the various areas.

2.08 Before proceeding with routine or special surveys on cables in conduit runs containing cable plant of a Connecting Company, the Electrolysis Supervisor shall consult with the Chief Engineer's office as to the desirability of arranging for a joint survey or investigation. All arrangements made with a Connecting Company shall be handled through the General Commercial Agent's office.

2.09 The Electrolysis Supervisor, prior to commencement of the work, shall review all estimates or work orders providing for new main run underground cable or conduit construction or rearrangements of existing underground plant, which are likely to affect electrolysis conditions. He shall arrange with the Construction Superintendent for notice of the completion of construction work in order that arrangements may be promptly made for such electrolysis surveys or special tests as may be required.

3. RECORDS

3.01 The Electrolysis Supervisor shall maintain maps or other suitable records showing the data obtained from special or routine surveys in each area in such a manner that electrolysis conditions may be readily visualized. In general, the results of not more than one routine survey should be plotted on a given map.

3.02 He shall maintain charts or curves showing the cable to earth potential and current flow on each of the drainage wires, based on the information obtained from the routine drainage wire tests.

3.03 He shall maintain a drawing for each drainage wire, showing the details of the Telephone Company's drainage system. The details of drainage wires of other subsurface structures and the railway negative return system shall also be shown on this drawing.

3.04 He shall maintain a complete record of the details of transactions with the cooperating companies regarding the installation or rearrangement of drainage wires or other mitigative measures.

3.05 He shall maintain a record of the location of all direct current electric railway track systems, negative feeder systems and associated substations.

3.06 He shall maintain a record of main foreign subsurface structure routes which may influence the electrolysis problem.

3.07 He shall maintain a record of all cable failures due to electrolysis or chemical action and the details associated therewith.

4. PREPARATION AND DISTRIBUTION OF REPORTS

4.01 The Electrolysis Supervisor shall prepare a report in memorandum form immediately upon completion of any of the following items of work and forward copies through the lines of organization to the General Plant Manager and the Chief Engineer:

(1) Installation of a new drainage wire or rearrangement of an existing drainage wire. New or revised drawings specified in Paragraph 3.04 should accompany the report.

(2) Rebalancing of an existing drainage scheme.

(3) Investigation of a cable failure caused by electrolysis or chemical action. A summary of the mitigative measures applied or recommended and the approximate cost should be included.

4.02 The Electrolysis Supervisor shall prepare an annual report as of December 31 of each year and forward copies through the lines of organization to the General Plant Manager and Chief Engineer not later than February 1 of each year. This report shall include the following items:

(1) A general summary of electrolysis conditions, including the following data, for each of the individual areas in which electrolytic exposures exist.

(a) Total number of manholes.

(b) Number of manholes at which routine surveys were made during the year.

(c) Per cent of total manholes surveyed.

(d) Number of manholes at which electrolysis conditions were considered unsatisfactory at the beginning of the year.

(e) Number of manholes at which unsatisfactory electrolysis conditions were discovered during the year.

(f) Number of manholes at which unsatisfactory electrolysis conditions were corrected during the year.

(g) Number of manholes at which electrolysis conditions were considered unsatisfactory at the end of the year (g=d+e-f)

(2) A brief discussion of all mitigative measures applied, together with the results accomplished by each.

(3) A summary of cable failures due to electrolytic or chemical corrosion, including the total approximate cost of repairs.

(4) A curve or chart showing the cable to earth potential and the current flow throughout the year on each drainage wire, as obtained from the periodic routine tests.