BELL SYSTEM PRACTICES
Outside Plant Construction and Maintenance

SECTION G73.310.1
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AT&T Co Standard

PRESSURE TESTING
MAINTAINING CABLES UNDER PRESSURE
GENERAL

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1. GENERAL

1.01 This section provides information of a general nature concerning the procedures for maintaining cables under continuous pressure.

1.02 The instructions on maintaining cables under pressure previously contained in Section G73.230, Issue 1, which is cancelled, have been revised and divided into several sections in this group to simplify the presentation of the information.

1.03 Pressures and pressure measurements specified in this group of sections should be converted to standard conditions of temperature, barometric pressure and altitude as described in the sections on correction of pressure measurements in order to permit comparison with subsequent measurements.

1.04 For gas pressure sections located in terrain above sea level the normal maintenance pressure of 6.0 or 9.0 pounds should be established at a base elevation equal to the altitude of the lowest valve point in the section. For example, in a gas section whose elevation ranges from 2,000 feet to 4,000 feet above sea level the base elevation of the section should be established at 2,000 feet.

1.05 All pressure readings made at locations more than about 150 feet above the base elevation of the section should be converted to equivalent pressures at the base elevation when determining the average pressure in a section for the

purpose of obtaining the rate of gas loss and charging dates, and also when determining charging pressures and plotting pressure gradients of a section as a whole.

2. RECORDS

2.01 To facilitate the work of maintaining cable under pressure, Form E-610 should be prepared for each gas section to show the location of all markers, manholes or poles along the cable and the locations of all splices and pressure testing equipment. The data should show the individual distances between markers, manholes or poles and the cumulative distance from some point such as a central office or end of gas section.

2.02 Records of the maintenance work done in each gas section should be maintained on Forms E-2909 and E-2910 Gas Pressure History Record, and Form E-2911—Summary of Gas Pressure Maintenance Results. These records provide the following information for each gas section:

(a) A means of determining the normal loss in gas pressure per month.

(b) A record of individual gas sections which are in need of further maintenance work.

(c) A record of the average pressure and date obtained from which the approximate date for the next recharging may be established.

(d) A history of all contactor alarms.

(e) A history of all gas leaks found.

(f) The amount of gas used in maintenance of the gas section.

(g) The results of routine contactor tests.

3. ROUTINE MEASUREMENTS

3.01 In the maintenance of a gas section, pressure readings are made at selected locations along the cable in order to determine the average pressure existing in a section at a particular time. A second set of readings is then taken at the same valves at a subsequent time. A comparison of the average pressures existing at the two times will establish the rate of pressure loss and date when it will be necessary to recharge the section to maintain adequate pressure.

3.02 Pressure readings taken for the purpose of determining average pressure in a section are called "routine readings" and the valve locations "routine reading valves." Routine readings may be taken with a 3-1/2-inch gauge which has been calibrated against a mercury manometer.

4. LOCATION OF ROUTINE READING VALVES

4.01 The valves at which routine readings are to be made should be established for each gas section and all subsequent routine readings taken at these same valves. To select routine reading valves divide the gas section into approximate equal lengths of 12,000 to 18,000 feet. Select easily accessible valves near the midpoints of each of these equal lengths as the routine reading valves.

4.02 Where gas sections consist of both aerial and underground or buried cable, routine reading valves should not be located within about 3,000 feet of the junction of the two types of plant because gas flow due to temperature changes may produce unreliable readings. On this basis routine reading values should not be located on the underground portion if its length is less than 6,000 feet.

4.03 Where circular gas sections are involved, select the routine valves for one of the cables as outlined above and use valves at the same locations for the second cable. This also applies to multi-cable routes in order that routine readings for all cables on the route may be made at the same locations.

5. INTERVALS BETWEEN ROUTINE READINGS

5.01 The interval of time between routine readings depends on the condition of the gas section and the rate at which the gas section is losing pressure. For a gas section in good condition, equipped with an alarm system, routine readings will, in general, be required at intervals of from one to six months. Intervals longer than six months need not be established, as a cable inspection is generally made at least twice a year.

5.02 On gas sections not equipped with alarm systems, the interval between routine readings generally does not exceed one month. More frequent readings, semimonthly or weekly, may be necessary on cables with a poor history record whose leak expectancy is high.

6. CONTACTOR OPERATING PRESSURE

6.01 Contactors located in a gas section maintained at 9 pounds are set to operate when the cable pressure falls to 6 pounds. Contactors in a section maintained at 6 pounds are set to operate at 3 pounds. The operating pressure of the contactors is checked at the time they are installed. One check of operating pressure should be made about one year after installation. No further check is necessary unless faulty operation develops.