

BELL SYSTEM PRACTICES
Outside Plant Construction
and Maintenance

SECTION G73.310.3
Issue 1, November, 1952
AT&T Co Standard

PRESSURE TESTING

MAINTAINING CABLES UNDER PRESSURE

CONTACTOR OPERATION

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1. GENERAL

1.01 This is a new section which describes the procedures to be followed after the operation of a contactor in cables maintained under continuous pressure.

1.02 When the normal loss of gas in a gas section is replaced by charging on a scheduled basis, the operation of a contactor will indicate the presence of a new leak or an increase in size of an existing leak which should be investigated by the maintenance forces.

1.03 The seriousness of the condition indicated by the contactor operation depends upon a number of intangible factors, such as the size of the leak, the maximum head of water likely to rise over the cable, the chance of a second leak occurring before the first is cleared, the position of the second leak in respect to the first, etc. However, considering the average pressure in the cable and the reservoir of gas available to prevent the entrance of moisture, a certain amount of delay can safely be allowed in a majority of cases between the time the contactor operates and the time the condition is investigated. Such delays can be used advantageously in efficient scheduling of the work.

2. ALLOWABLE DELAY TIMES

2.01 The following tables have been prepared to indicate the maximum time which, under favorable weather and water conditions, can safely be allowed to elapse before investigating a contactor operation. The delay times are based on permitting the average pressure between a leak and the end of a gas section to decrease to not less than two pounds in underground or buried cable and not less than one pound in aerial cable. Normally, the leak should be located and cleared or other steps taken to assure protection of service before expiration of the allowable delay time.

2.02 The delay times given in these tables are not rigid and may be modified whenever the judgment of the supervisor indicates that local conditions and past history of the cable make such modification desirable.

NON-CIRCULAR UNDERGROUND SECTIONS MAINTAINED AT 9 POUNDS, NOMINAL CONTACTOR SPACING 10,000 FEET

<u>Contactor Location Relative to Plug</u>	<u>Location of Leak Feet from Plug</u>	<u>Delay Period in Hours</u>
First	0-10,000	0
Second	10,000 to 20,000	18
All others	over 20,000	70

NON-CIRCULAR AERIAL SECTIONS MAINTAINED AT 6 POUNDS, NOMINAL CONTACTOR SPACING 16,000 FEET

<u>Contactor Location Relative to Plug</u>	<u>Location of Leak Feet from Plug</u>	<u>Delay Period in Hours</u>
First	0-16,000	0 (See Note)
All others	over 16,000	70

Note: A delay time of 70 hours is permissible under favorable weather conditions.

**NON-CIRCULAR COMBINATION AERIAL
AND UNDERGROUND SECTIONS
MAINTAINED AT 6 POUNDS**

**Underground Portions
Nominal Contactor Spacing 7,000 Feet**

<u>Contacto Location Relative to Plug</u>	<u>Location of Leak Feet from Plug</u>	<u>Delay Period in Hours</u>
First	0-7,000	0
Second	7,000-14,000	0
Third	14,000-21,000	33
All others	over 21,000	70

**Aerial Portions
Nominal Contactor Spacing 16,000 Feet**

<u>Contacto Location Relative to Plug</u>	<u>Location of Leak Feet from Plug</u>	<u>Delay Period in Hours</u>
First	0-16,000	0 (See Note)
All others	over 16,000	70

Note: A delay time of 70 hours is permissible under favorable weather conditions.

**ALL CIRCULAR AERIAL, UNDERGROUND OR
COMBINATION SECTIONS MAINTAINED
AT 6 OR 9 POUNDS**

<u>Contacto Location Relative to Plug</u>	<u>Location of Leak Feet from Plug</u>	<u>Delay Period in Hours</u>
All contactors	All locations	70

2.03 The following general precautions apply in considering the allowable delay times in answering contactor operation.

- (a) Alarms from contactors protecting submarine cable should be investigated immediately.

(b) Where the location of plugs results in a stub or branch cable length in excess of 600 feet in a gas section, the contactor protecting this stub or branch cable should be considered as the first contactor from a plug in a non-circular section.

(c) During periods when by-passes around intermediate plugs in a gas section, such as those located at junctions between aerial and underground plant, are closed, the contactors on either side of the plug should be considered as the first contactor from a plug in a non-circular section.

2.04 When a contactor operation is investigated, sufficient pressure readings should be taken each side of the operated contactor to definitely establish the existence of a gas leak, its approximate location and size, and the value of remaining gas pressure in the cable adjacent to the leak.

2.05 Except under emergency conditions to protect service, gas should not be added to the cable until the pressure readings called for in Paragraph 2.04 have been obtained. This information is required to determine the seriousness of the condition and whether the leak must be cleared immediately or the work can be deferred and scheduled on a normal basis.

3. DISCONNECTING CONTACTORS FROM ALARM PAIR

3.01 The high degree of protection of service obtained in continuous pressure systems equipped with alarm is dependent upon all contactors being connected to the alarm pair. Except during contactor replacement or repair, **contactors should never be disconnected from the alarm pair.**

4. MONITORING ALARM CIRCUIT FOLLOWING CONTACTOR OPERATION

4.01 After a contactor has operated, the alarm signals in the central office become inoperative until the contactor is again cleared by restoring normal gas pressure in the cable. During this period, arrangements should be made for the central office forces to monitor the alarm circuit at suitable intervals to detect the operation of other contactors in the gas section.