



INTERNATIONAL TELECOMMUNICATION UNION

**ITU-T**

TELECOMMUNICATION  
STANDARDIZATION SECTOR  
OF ITU

**L.7**

**CONSTRUCTION, INSTALLATION  
AND PROTECTION OF CABLE AND OTHER  
ELEMENTS OF OUTSIDE PLANT**

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**APPLICATION OF JOINT CATHODIC  
PROTECTION**

**ITU-T Recommendation L.7**

(Extract from the *Blue Book*)

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## NOTES

1 ITU-T Recommendation L.7 was published in Volume IX of the *Blue Book*. This file is an extract from the *Blue Book*. While the presentation and layout of the text might be slightly different from the *Blue Book* version, the contents of the file are identical to the *Blue Book* version and copyright conditions remain unchanged (see below).

2 In this Recommendation, the expression “Administration” is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

## **Recommendation L.7**

### **APPLICATION OF JOINT CATHODIC PROTECTION**

*(Geneva, 1976)*

#### **1 General**

By joint cathodic protection of several underground metallic structures is meant corrosion protection of these structures by means of common protective devices.

A joint protection system for several underground metallic structures is composed of electrical bonds between the structures and of common protective devices complying with cathodic protection and electrical drainage requirements.

Joint protection techniques enhance the reliability of buried structures, improve efficiency of cathodic protection devices and also reduce total investment and maintenance costs of the protective system.

#### **2 Conditions for application of joint cathodic protection**

It is practicable to apply joint cathodic protection of underground metallic plant when several different structures approach or cross each other and when it is necessary to avoid the harmful effects of the protected structure on neighbouring unprotected structures, provided that it is economical and there is no better means to avoid this influence. The harmful influence of cathodic polarization or protected plant on the neighbouring metallic structures occurs when:

- a) measured potentials are lower or higher than the values recommended;
- b) the danger of corrosion on neighbouring underground metallic structures is increased.

Joint protection of telecommunication cables with other structures can be reasonably applied in the cases when:

- a) nearby underground structures are at a distance generally not exceeding 50 metres;
- b) the buried plants cross each other;
- c) the ground beds or reactive anodes of a cathodic protection system have a harmful influence on nearby unprotected plants.

Joint protection of telecommunications and power cables in accordance with reference [1] may be considered when the potential to earth of the telecommunications cable does not exceed the safe voltage required by local or national safety rules in the event of an earth fault or short circuit on the power supply system.

Joint cathodic protection should provide on the protected plants potentials which are within the values indicated in reference [1].

In the case of joint protection it may be possible to use devices which automatically control the current output of the cathodic protection equipment.

#### **3 Conditions for electrical bonds**

Special bonds are used to provide electric contact between jointly protected plants. Bonds may be direct, or provided with a resistor (to limit the current) or polarized.

Direct bonds may be used in the following cases:

- a) when underground metallic structures of the same type are crossing or approaching each other;
- b) when the provision of bonds between structures of different types does not reduce the efficiency of the primary cathodic protection system.

Resistor bonds which control the current applied to different types of plant should be used when potentials on these structures should be controlled.

Polarized bonds should be used:

- a) for joint drainage and cathodic protection systems;
- b) to prevent current flowing from a pipeline to telecommunication plant;
- c) to protect against failure of the cathodic protection equipment.

Bonds should not be installed between buried structures and power supply cables and equipment unless it is safe to do so in the event of a fault on the power supply system and it is in accordance with local and national safety rules.

#### **4 Monitoring the performance of joint cathodic protection devices**

The performance of joint cathodic protection devices should be monitored by means of:

- a) routine examination of protective devices and equipment;
- b) routine measurements of interaction potential differences with the protection equipment switched on and switched off at all the plants incorporated in the joint protection system, in compliance with local accepted procedures.

When tests or changes are made on the joint cathodic protection system, the presence or agreement of the representatives of operating agencies whose underground structures are incorporated in the joint protection system is recommended.

#### **Reference**

- [1] CCITT manual *Outside plant technologies for public networks*, ITU, Geneva, 1988.