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Temperature in underground containers for the installation of repeaters

ITU-T G-series Recommendations – Supplement 34

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NOTES

- 1 Supplement 34 to the G-series Recommendations was approved in Melbourne (1988) and published in Fascicle III.5 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 Supplement, the expression “Administration” is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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TEMPERATURE IN UNDERGROUND CONTAINERS FOR THE INSTALLATION OF REPEATERS

(Melbourne, 1988)

(see Recommendation G.950)

1 General

This Supplement consists of two parts: A and B.

Part A (source: Federal Republic of Germany) informs about the ground temperature taken from meteorological sources in most regions of the world, and shows the seasonal variations as a function of the depth (in the Federal Republic of Germany).

Part B (source: Italy) gives guidelines for the calculation of the ground temperature in the container, depending, *inter alia*, from the atmospheric temperature, the depth and the dissipation of the equipment in the container.

Both parts give additionally some general information which is useful as a guidance for planning.

2 Part A

2.1 Definition

In the following, climatic conditions are discussed which are relevant to small underground containers without any means for adjusting to specific temperature conditions. These containers are normally hermetically closed and need not be opened e.g., for preventive maintenance. They can be operated with or without gas pressure supervision or they may contain drying agents.

2.2 Temperature in underground containers

The temperature in underground containers depends on the temperature of the surrounding soil. Additionally, it is influenced by the power dissipation of the installed equipment.

The ground temperature at various depths is well known for most of the regions of the world [1]. Figure 1 shows the seasonal variation of the ground temperature as a function of the long term mean value of the ground temperature. Examples of the variation of the temperature with time for a period of 1 year is shown in Figure 2. The yearly minimum and maximum temperatures as a function of the depth are plotted in Figure 3. Figures 2 and 3 are examples only for a specific region in Germany (Federal Republic of) and for sandy soil.

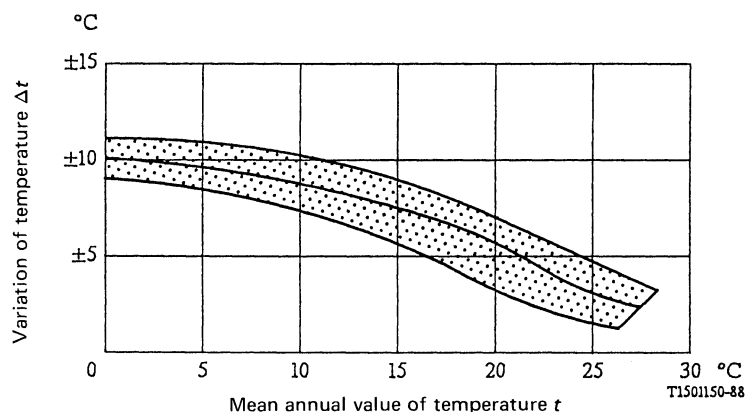


FIGURE 1

Relation between the long-term mean value of the ground temperature t and the annual variations to be expected at a depth of approximately 80 cm