

REPORT
ON
GUIDING PRINCIPLES FOR THE
SPECIFICATION OF SERVICE CONDITIONS
IN
ELECTRICAL STANDARDS



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by
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P R E F A C E

The formulation and revision of standards by many technical committees has resulted in non-uniformity in the treatment of service conditions. This report has been prepared as a guide to technical committees for use when standards are being prepared or revised, with the object of obtaining consistency, insofar as practicable, among the standards for various kinds of electrical equipment, which must often operate under the same service conditions.

Service conditions are specified to give the limiting conditions of operation for which standard equipment is designed. For example, ambient temperature values should be selected which, in combination with standard temperature rises, limit insulation temperatures to suitable values. By specifying a limiting value in "Service Conditions," a readily usable simple means of stating conditions for which standard ratings are suitable is provided.

The application and operation of standard equipment under conditions more severe than the limiting values specified in Usual Service Conditions may sometimes be justified economically. The use of standard equipment under more severe conditions and the acceptance of shorter than usual life or less margin of safety may be preferred to obtaining equipment specially designed for the conditions. This may apply particularly to temperatures, if the excessive temperatures are of short duration or infrequent occurrence, the cumulative effects are not objectionable and low average temperatures are prevalent. The effect of such use should be properly evaluated for satisfactory results.*

However, the aging of insulation due to temperature is not the only influence affecting the life of equipment. For example, where expansion and contraction in conductors, due to wide variations in temperature rise, is an important consideration, the effect may be more detrimental than if high but steady temperatures are maintained.

This report consists of two parts. It is recommended that as far as possible selections be made from **Part I** for the statement of Service Conditions for particular equipment standards. For uniformity it is suggested that the exact wording be used where it applies. **Part II** covers application and testing. Selections from this part are recommended for inclusion as supplementary information to specific standards where applicable and desirable.

* Weather Bureau Records of outdoor temperatures for a number of cities of the United States show that 40 C is seldom exceeded more than 0.5 percent of the time and that 30 C is exceeded as much as 12 percent of the time in only a very few localities. Indoor temperatures may be higher but statistical data are meagre. For more complete information regarding temperature and its effects, see AIEE Standards No. 1 and No. 1A.