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ENVIRONMENTAL CONDITIONS APPLICABLE TO
TRANSPORT AIRCRAFT ELECTRICAL EQUIPMENT



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PREPARED BY
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INTRODUCTION

Numerous reports, recommendations and specifications have been written covering environmental conditions as they pertain to airplanes in general, aircraft bearings and lubricants, instruments, etc., for both military and civil aircraft, but a general feeling exists among electrical equipment manufacturers that there is a lack of information regarding environmental conditions for civil aircraft electric equipment. It is therefore apparent that for the benefit of electrical equipment manufacturers, in order that they may have a better understanding of environmental conditions existing in civil aircraft, it is fitting to cover the environmental conditions encountered in civil aircraft type operations. These conditions which follow, cover the performance levels (not quality requirements) required for satisfactory operation of transport aircraft electric equipment. Actually, there is very little difference between the environmental conditions which would apply to military aircraft and to transport aircraft today except unusual combat environments.

Proper application engineering of electric components is of paramount importance to any discussion of environmental conditions. In this regard it is important that airframe manufacturers, equipment manufacturers, and equipment subassembly manufacturers co-operate to ascertain that all operational service performance requirements are mutually understood, adequately defined and complied with. For example, service life requirements in terms of airplane hours is normally expected to be at least 1,000 hours between overhaul periods by the transport operators and to have a total life expectancy of at least 3,000 hours. It is expected that expendable items such as brushes, bearings, grease, etc., will be inspected and possibly replaced at a normal overhaul. Equipment may often be stored for a period of one year after which a normal life to overhaul is to be expected.

Proper application engineering should be fixed as a mutual responsibility rather than one of a particular equipment or airframe manufacturer's responsibility. This responsibility should not be confused with that responsibility relative to satisfactory service operation of equipment which rests, usually, with one manufacturer.

A basic requirement that has been set up and has been mutually agreed upon by transport operators as noted from numerous surveys as being practical is that the airplanes shall function satisfactorily throughout the temperature range -65 degrees to +160 degrees F. This means that the aircraft as a whole, including aeronautical equipment, electrical and otherwise, shall be so constructed that it will function satisfactorily, insofar as materials and engineering can be made available, in all climatic and temperature conditions that will be encountered.

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