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AS/NZS 3009:1998

Australian/New Zealand Standard®

Electrical installations—Emergency power supplies in hospitals

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This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee HT/25, Emergency Power Supplies in Hospitals. It was approved on behalf of the Council of Standards Australia on 19 December 1997 and on behalf of the Council of Standards New Zealand on 16 December 1997. It was published on 5 March 1998.

The following interests are represented on Committee HT/25:

Association of Consulting Engineers, Australia
Australian Society of Anaesthetists
Department of Human Services (Victoria)
Department of Public Works and Services, N.S.W.
Gas and Fuel, Australia
Health Department of Western Australia
Hospital Electrical Safety Advisory Committee, N.Z.
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Electrical installations—Emergency power supplies in hospitals

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee HT/25, Emergency Power Supplies in Hospitals, to supersede AS 3009—1985.

Major alterations to the previous edition are as follows:

(a) Allowance of the use of mains supply as an emergency supply, if the normal supply is an on-site generator.

(b) Allowance of the use of natural gas as a fuel for engine-driven sets.

(c) Requirements for fire-rated cables where emergency lighting and power supply systems pass through areas that are not fire-rated have been removed, because the Committee believes that the maintenance of emergency services after fire has destroyed normal cabling is not needed in all circumstances. However, advice has been added (in Clause 8.5) that fire-rated cables should be used in some circumstances.

Interruption of normal electrical service in hospitals may be caused by catastrophes such as storms, floods, fires, earthquakes, or explosions or by failures of the systems supplying electrical power (including those resulting from system damage from traffic accidents), or by incidents within the hospital itself. Outages may be corrected in seconds or may require hours. For all such situations, electrical systems need to be planned so as to limit internal disruption and to provide for continuity of vital services at all times.

Medical and nursing sciences are becoming progressively more dependent upon electrical apparatus for the preservation of life of hospitalized patients. For example, year by year, more cardiac operations are performed, in some of which the patient's life depends upon artificial circulation of the blood; in other patients, life is sustained by means of electrical impulses that stimulate and regulate heart action; in others, suction developed by electrical means is routinely relied upon to remove body fluids and mucous that might otherwise cause suffocation. Lighting is needed in strategic areas in order that precise procedures may be carried out, and power is needed to safeguard such vital services as refrigerated stores held in tissue, bone and blood banks. The maximum acceptable delays prior to restoration of supply varies as a function of the area in question and the nature of the procedures undertaken.

Selecting vital areas and functions considered to be essential, designing safeguards to ensure continuity in these circuits, and maintaining the electrical and mechanical components of such essential services so that they will work when called on are complex problems that warrant standardized guidance for regulatory authorities, governing boards and administrators of hospitals, and architects and engineers concerned with their construction. Such guidance is offered in this Standard.

This Standard is only concerned with ensuring that, in the event of interruption of the normal electrical supply, emergency lighting and power will be restored to those circuits deemed to be essential (vital or delayed vital) to ensure that effective and safe care of patients can be maintained.

The Standard provides for a variety of forms of emergency power plant (e.g. batteries, static inverters and engine-driven generating sets) and for their automatic or manual operation.

Requirements for emergency evacuation lighting are primarily covered by reference to AS/NZS 2293.1, *Emergency evacuation lighting for buildings*, Part 1: *System design, installation and operation*, and in building regulations. However, this Standard includes some recommendations for location of emergency evacuation luminaires and exit signs for guidance of regulatory authorities and for those situations where the relevant building regulations are not specified.

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In the preparation of this Standard, the Committee was especially requested to review closely what equipment necessitated 'no break' supply. In this regard, investigations and comments from hospital staff revealed that very few circuits genuinely necessitate instantaneous re-energization through 'no break' systems. As a result, most 'essential' circuits within hospitals have been allocated 'vital' (30 s) or 'delayed vital' (2 min) classifications by this Standard. These classifications provide for the use of more economical and practicable emergency power plant.

Investigations also revealed that specialist uninterruptible power supplies for sophisticated equipment, e.g. computers, are nearly always required to be 'tailored' to the specialist equipment they serve and are therefore usually 'extras' specified or provided by the equipment manufacturer. Accordingly, this Standard does not include requirements for such special power supplies, the details of which need to be negotiated with the equipment supplier.

The term 'informative' has been used in this Standard to define the application of the appendix to which it applies. An 'informative' appendix is only for information and guidance.

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