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| PPPL | PRINCETON PLASMA PHYSICS LABORATORY ES&H DIRECTIVES | |  |
| | ES&HD 5008 SECTION 2, CHAPTER 1 Introduction | | |
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CHAPTER 1 INTRODUCTION

1.1 PERFORMANCE

Design, construction, installation, test, operation, maintenance, and decommissioning (life-cycle) of electrical systems shall be performed and completed in a manner to minimize hazards that could injure personnel or damage equipment.

1.2 SAFETY FUNDAMENTALS

1.2.1 The elements of work, i.e., a worker, a work process, and an environment are considered in safety analysis. An effective electrical-safety program must address each of these elements and their interactions under normal and emergency conditions. This Section 2.0 specifies practices and procedures for normal conditions. Practices and procedures for other conditions are covered in the PPPL Emergency Preparedness Plan and PPPL GEN-006, Attachment 2. Industrial and utility safety practices are supplemented by the criteria in this, Section 2.0 to account for the unique hazards present in R&D laboratories, their equipment, and systems.

1.2.2 Risk is a measure of the probability and severity of adverse effects. The sources of risk are hazards. Hazards have been defined as having the potential for harm or damage to people, property, or the environment. Hazards include the characteristics of things and people's actions or In-actions –which, for our purposes, are equivalent to equipment or system failures and human errors of omission or co-mission. See informative safety design criteria material in Chapter 17, Attachment I.

1.2.3 The electrical safety criterion applicable to PPPL electrical apparatus and systems states that it shall take two simultaneous failures of high voltage barriers or a single failure of a low voltage barrier to endanger workers while they are performing their work processes. In either case, the initiating event or failure which is postulated to endanger the workers shall be considered independent of any barrier failures. Barriers may be placed on the energy source, between the source and the workers, or on the workers. See “Isolation of Hazards” in paragraphs 4.1 and 4.2 in Chapter 4. Temporary barriers used for hands-on work are described in Chapter 3, paragraphs 3.3.1 through 3.3.6.

1.2.4 In this Section 2.0, electrical work performed on or near live circuits may be classified as either high-, moderate-, or low-risk work. Each is defined in Chapter 2, paragraph 2.1.19.

1.3 SCOPE

This Section 2.0 covers regulations, practices, and procedures set forth by PPPL to control and minimize the hazards associated with electrical systems and equipment.

1.4 APPLICATIONS

This Section 2.0 applies to all personnel directly engaged in work processes performed on electrical systems and equipment at the Laboratory during the life cycle of its facilities and projects. The administrative responsibilities, general safety practices, and procedures used to minimize hazards to personnel are in Chapter 2 through Chapter 5. The remaining Chapter 6 through Chapter 15 describe means used to mitigate the identified hazards associated with specific types of electrical equipment. Material in the References in Chapter 16 includes upper-tier requirements documents and/or recommended practices used to mitigate the consequences of electrical hazards. The Appendices of Chapter 17 depict methods used successfully to satisfy Section 2.0 requirements.

1.5 VARIANCES

Variances from this Section 2.0 shall require documented approval by the Head of ES&H or designee. Interim variances (until the next revision of the ES&H Manual section involved in the variance) may be obtained upon the written approval of the Head of ES&H or designee. If the need arises for a variance when performing temporary repairs during off-hours, contact the Facility Manager using the Sky Pager system (see GEN-006, Attachment 4).

1.6 VIOLATIONS

Violation of an established safety regulation or standard where the potential consequences may result in serious harm to the employee, other employees or significant damage to the environment, equipment, or both, is considered to be a serious violation of the PPPL Code of Conduct. Such violations may be considered cause for suspension or discharge. See the PPPL Personnel Practices Manual.