



**FESHCom**  
**Electrical Safety Subcommittee**

ESS Determination D2020-01 31 January 2020

## **AHJ Approval and NRTL Listings**

### Scope:

This determination documents the regulations that require electrical equipment at Fermilab to be approved by the Electrical Authority Having Jurisdiction (AHJ) or the AHJ's designee, and how the listing of electrical equipment by a Nationally Recognized Testing Laboratory (NRTL) plays a central role in this process. This determination applies to all facilities at Fermilab and its leased spaces, including residential facilities.

### Motivation:

The need for NRTL-listed electrical equipment at Fermilab is frequently questioned, particularly when CE-marked or less expensive or more readily obtainable non-listed equipment could be used. This determination provides a readily accessible summary and obviates the need to prepare duplicative responses to individual inquiries.

### Regulations:

The OSHA requirements for Safety in General Industry (29 CFR 1910) are, by reference, made a part of the contract between the Department of Energy (DOE) and Fermi Research Alliance (FRA) to operate and maintain the Fermilab site and leased spaces. FRA is required to follow the regulations contained in 29 CFR 1910, hereafter referred to as "1910."

### 1910.303(a) reads:

*"Approval.* The conductors and equipment required or permitted by this subpart shall be acceptable only if approved, as defined in Sec. 1910.399."

### 1910.399 defines Approved as:

*"Approved.* Acceptable to the authority enforcing this subpart. The authority enforcing this subpart is the Assistant Secretary of Labor for Occupational Safety and Health. The definition of "acceptable" indicates what is acceptable to the Assistant Secretary of Labor, and therefore approved within the meaning of this subpart."

Because the Department of Energy is a co-equal branch of government with the Department of Labor, this authority is the Secretary of Energy rather than the Assistant Secretary of Labor. The Secretary of Energy has delegated this authority to Site Office managers, which for Fermilab is Fermilab Site Office (FSO) manager. The FSO manager has assigned certain duties under this authority to be performed by the Fermilab Electrical Safety Officer (ESO), or the ESO's designees.

### 1910.399 defines Acceptable as:

*"Acceptable.* An installation or equipment is acceptable to the Assistant Secretary of Labor, and approved within the meaning of this Subpart S:

(1) If it is accepted, or certified, or listed, or labeled, or otherwise determined to be safe by a nationally recognized testing laboratory recognized pursuant to § 1910.7; or

(2) With respect to an installation or *equipment of a kind that no nationally recognized testing laboratory accepts, certifies, lists, labels, or determines to be safe*, if it is inspected or tested by another Federal agency, or by a State, municipal, or other local authority responsible for enforcing occupational safety provisions of the National Electrical Code, and found in compliance with the provisions of the National Electrical Code as applied in this subpart; or

(3) With respect to custom-made equipment or related installations that are designed, fabricated for, and intended for use by a particular customer, if it is determined to be safe for its intended use by its manufacturer on the basis of test data which the employer keeps and makes available for inspection to the Assistant Secretary and his authorized representatives.”

Note the italics in part (2) of this definition, which are not the original but placed here for emphasis. Fermilab is prevented from approving equipment that is not NRTL listed if similar equipment that is NRTL listed is available. As stated in an OSHA Standard Interpretation written on 24 August 1993 by Linda R. Anku to W. A. Mattiford of the Philadelphia Electric Company, “In summary then if there are ten different models of a particular kind of equipment, but only one of them is accepted, certified, listed, labeled or otherwise determined to be safe by a NRTL only that one would be considered to be "approved"; unless of course it is custom made equipment.” OSHA Standard Interpretations are not binding on the DOE, but only in exceptional circumstances would the DOE find cause to deviate from them.

1910.7 defines what a NRTL is, what it does, and the qualifications and process for becoming a NRTL. (The full text may be found on the OSHA website.) In regard to the status of equipment bearing a CE mark, 1910.7(b)(3) states:

“The NRTL is completely independent of employers subject to the tested equipment requirements, and of any manufacturers or vendors of equipment or materials being tested for these purposes.”

The CE mark is a self-certification made by the equipment manufacturer that they have met the EN standards used in the European Union. Because the entity making the certification is the same as the manufacturer, the “completely independent” requirement to be a NRTL is not met, and so a CE mark cannot be considered an NRTL seal.

Determination:

Based on these regulations, no FRA employee has the authority to approve for use at Fermilab or its leased spaces non-listed equipment if a listed equivalent exists. Cost and availability are not sufficient justifications for deviating from this policy. A large cost differential in favor of the non-listed equipment may indicate that significant safety deficiencies may be present in the non-listed item.

For “equipment of a kind that no nationally recognized testing laboratory accepts, certifies, lists, labels, or determines to be safe,” a field inspection by a NRTL or by the AHJ can provide that approval. For equipment that a single vendor manufactures and sells to Fermilab, the NRTL field inspection is strongly preferred as the evaluation is performed by a disinterested entity that is not subject to or whose judgement could be affected by budget, schedule, or other workplace factors.

Custom-made equipment, equipment that is not available with a NRTL listing or field inspection, and applications of NRTL-listed equipment not covered by the listing or manufacturer’s instructions shall be inspected by the AHJ or the AHJ’s designee prior to energization.