

OSHA's New Power Generation  
Transmission and Distribution  
Subpart V

and also 1910.269 in General Industry

*Maybe some 70E & ASTM stuff too*

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- annual fatality rate for power line workers is about 50 deaths per 100,000 employees
- Current standard is over 35 years old (1971)
- OSHA also intends to amend the corresponding standard for general industry

- OSHA published an NPRM on June 15, 2005
- A public hearing was held from March 6 through March 14 in 2006
- The record was reopened a second time to gather information on minimum approach distances for all voltages and on the newly revised IEEE C2

- public hearing was held on October 28, 2009
- The posthearing comment period ended in February 2010
- OSHA anticipates publishing a final rule in May 2011

| Action                                   | Date       | FR Cite     |
|--|------------|-------------|
| SBREFA Report                            | 06/30/2003 |             |
| NPRM                                     | 06/15/2005 | 70 FR 34821 |
| NPRM Comment Period End                  | 10/13/2005 |             |
| Comment Period Extended to<br>01/11/2006 | 10/12/2005 | 70 FR 59290 |
| Public Hearing To Be Held<br>03/06/2006  | 10/12/2005 | 70 FR 59290 |
| Posthearing Comment Period<br>End        | 07/14/2006 |             |
| Reopen Record                            | 10/22/2008 | 73 FR 62942 |
| Comment Period End                       | 11/21/2008 |             |
| Close Record                             | 11/21/2008 |             |
| Second Reopening Record                  | 09/14/2009 | 74 FR 46958 |
| Comment Period End                       | 10/15/2009 |             |
| Public Hearings                          | 10/28/2009 |             |
| Posthearing Comment Period<br>End        | 02/10/2010 |             |
| Final Rule                               | 05/00/2011 |             |

## Small Business Regulatory Enforcement Fairness Act (SBREFA)

OSHA expects that final Subpart V will differ from proposed Subpart V because of changes adopted based on the rulemaking record.

When the final rule is published, the Agency intends to make corresponding changes to Sec. 1910.269 to keep the two rules the same, except to the extent that substantial differences between construction work and general industry work warrant different standards.

Similarly, the Agency intends to adopt changes to Sec. 1910.137 so that it is the same as Sec. 1926.97.

## Subpart V--Electric Power T &D

### Sec.

- 1926.950 General.
- 1926.951 Medical services and first aid.
- 1926.952 Job briefing.
- 1926.953 Enclosed spaces.
- 1926.954 Personal protective equipment.
- 1926.955 Ladders and platforms.
- 1926.956 Hand and portable power tools.
- 1926.957 Live-line tools.
- 1926.958 Materials handling and storage.
- 1926.959 Mechanical equipment.
- 1926.960 Working on or near exposed energized parts.
- 1926.961 Deenergizing lines and equipment for employee protection.
- 1926.962 Grounding for the protection of employees.
- 1926.963 Testing and test facilities.
- 1926.964 Overhead lines.
- 1926.965 Underground electrical installations.
- 1926.966 Substations.
- 1926.967 Special conditions.
- 1926.968 Definitions applicable to this subpart.

1910.269 paragraph 1926 Sub V sections

- (a)..... Sec. 1926.950..... General, scope, and training.
- (b)..... Sec. 1926.951..... Medical services and first aid.
- (c)..... Sec. 1926.952..... Job briefing.
- (e)..... Sec. 1926.953..... Enclosed spaces.
- (f)..... Sec. 1926.967(f)..... Excavations.
- (g)..... Sec. 1926.954..... Personal protective equipment.
- (h)..... Sec. 1926.955..... Ladders and platforms.
- (i)..... Sec. 1926.956..... Hand and portable power tools.
- (j)..... Sec. 1926.957..... Live-line tools.
- (k)..... Sec. 1926.958..... Materials handling and storage.
- (l)..... Sec. 1926.960..... Working on or near exposed energized parts.
- (m)..... Sec. 1926.961..... Deenergizing lines  
and equipment for employee protection.
- (n)..... Sec. 1926.962..... Grounding for the protection of employees.
- (o)..... Sec. 1926.963..... Testing and test facilities.
- (p)..... Sec. 1926.959..... Mechanical equipment.
- (q)..... Sec. 1926.964..... Overhead lines.
- (s)..... Sec. 1926.967(k)..... Communication facilities.
- (t)..... Sec. 1926.965..... Underground electrical installations.
- (u)..... Sec. 1926.966..... Substations.
- (w)..... Sec. 1926.967..... Special conditions.
- (x)..... Sec. 1926.968..... Definitions.



Paragraphs having have no counterparts in Subpart V

(d) LOTO in Gen plants

(r) Line clearance tree trimming

(v) Power Generation

The construction of an electric power generation station normally poses hazards more akin to those of general construction rather than those found in the operation and maintenance of the generation plant.

The only exceptions would be during the final phase of construction of a generating station, when electrical and other acceptance testing of the installation is being performed, and during "reconstruction" phases, when other portions of the generating station would still be in operation

During these two operations, the work being performed resembles general industry work, and the appropriate work practices to follow are contained in the general industry standard Sec. 1910.269. Therefore, rather than repeat the relevant portions of Sec. 1910.269 in Subpart V, OSHA has simply stated in Sec. 1926.950(a)(3) that such work shall comply with Sec. 1910.269.

- Small Business Advocacy Review Panel (SBAR Panel) for this rulemaking in accordance with the provisions of the Small Business Regulatory Enforcement Fairness Act.
- The SBAR Panel consisted of representatives of OSHA, of the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget, and of the Office of Advocacy within the U.S. Small Business Administration. The Small Entity Representatives on the panel known as (SERs).

- **SERs raised 21 issues including**
- **Economic impact**
- **How to comply with performance based language**
- **Host contractor responsibilities (resembled 70E 110.5)**
- **FR clothing issues**
- **Training certification – establish proficiency**
- **Fall protection/fall restraint**

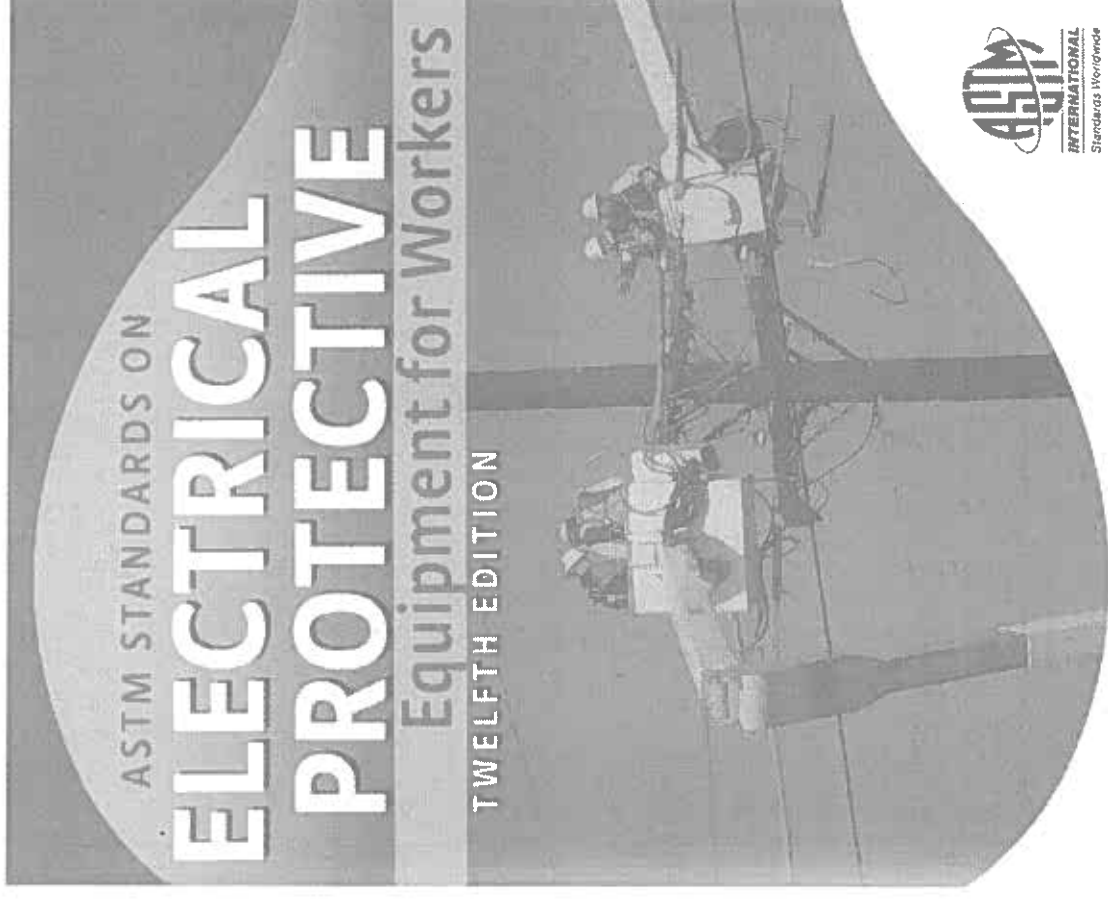
OSHA has supplemented the basic training requirements proposed in Sec. 1926.950(b)(1) and (b)(2) with two additional requirements:

(1) a requirement for regular supervision (that is, supervision that takes place on a periodic basis throughout the year) and an annual inspection by the employer to determine whether or not each employee is complying with the safety-related work practices required by Subpart V and

(2) a requirement for additional training whenever The regular supervision or annual inspection indicates that the employee is not following the safety-related work practices required by the standard, New technology, new types of equipment, or changes in procedures necessitate the use of safety-related work practices that are different from those that the employee would normally use, or The employee must use safety-related work practices that are not normally used during his or her regular job duties.

# 1910.137 expected changes Electrical Protective Equipment Standard (Sec. 1926.97)

F18 Committee  
writes these  
standards



July 22, 2009

F18 Member: WK14928 Item 13

The precision and bias for leather gloves has been added to the proposed and the few negatives have been addressed including the requirement to have leather gloves tested OVER rubber gloves. All gloves may be tested separately or together as desired.

The idea is to develop a test method to test rubber gloves, leather protectors and other non voltage rated gloves for protection from arc flash. Arc Rated gloves are required by the new NFPA 70E-2009 standard but it also still allows rubber gloves with leather protectors whether rated or not. This standard will serve two primary purposes: 1) It will afford protection information and potential ignition information on gloves for exposure to electric arc. 2) It will increase the innovative pressure to make gloves lighter weight and more flame resistant in the voltage rated side and give realistic ratings on other gloves for exposure to arc but not exposure to shock. Other typos and language has been changed better understanding and the requirement to report thickness of gloves in the area the calorimeter touches and glove color has been added. This was done in the precision and bias testing and this data is now in the Precision and Bias statement and will be presented in the meeting in the fall.

Call or write me with any questions you may have.

Sincerely,  
Elihu "Hugh" Hoagland

## **NFPA 70 E Article 250.2 Inspection and Testing of Protective Equipment and Protective Tools.**

**(A) Visual.** Safety and protective equipment and protective tools shall be visually inspected for damage and defects before initial use and at intervals thereafter, as service conditions require, but in no case shall the interval exceed 1 year, unless specified otherwise by the respective ASTM standards.

**(B) Testing.** The insulation of protective equipment and protective tools, such as items (1) through (14) of 250.1, shall be verified by the appropriate test and visual inspection to ascertain that insulating capability has been retained before initial use, and at intervals thereafter, as service conditions and applicable standards and instructions require, but in no case shall the interval exceed 3 years, unless specified otherwise by the respective ASTM standards.



## ASTM Proposal

### ASTM F-1505 Insulated and Insulating Hand Tools

F12 Testing 12.2 Field inspection, cleaning and proper storage shall be performed by the user (see Appendix X4).

X4.1.4 *Periodic Examination and Electrical Retesting*—An annual visual examination by a competent person is recommended to determine the suitability of the tool for further service.

In case of doubt after visual examination, the routine prescribed dielectric test shall apply (see Sect. 8.3).

The standard in its current form is not useful to authorities having jurisdiction (AHJ's), such as OSHA.

The key reasons for the standard rewrite was predicated on NFPA 70E retesting requirements however the ASTM standard requirements of, “an annual visual examination by a competent person is recommended to determine the suitability of the tool for further service” is unenforceable as a consensus organization standard. This also renders the NFPA 70E requirement in 250.2(B) unenforceable to AHJ's.

The failure to provide a definition of “competent person” and/or establishing specific tool criteria requiring retesting makes the standard requirements unenforceable to AHJ's (such as OSHA) which have to meet legal sufficiency requirements for compliance/enforcement purposes.

Having served as OSHA's electrical compliance expert and having trained OSHA compliance officers for over 20 years (and continuing to train them nationwide), regrettably I have to advise our OSHA officers that enforcement of these requirements as proposed are unsustainable in front of an administrative law judge (ALJ).

## 1910.137 expected changes Electrical Protective Equipment Standard (Sec. 1926.97)

- Rubber insulating gloves J6.6-1971
- Rubber matting J6.7-1935 (R1971)
- Rubber insulating blankets J6.4-1971
- Rubber insulating hoods J6.2-1950 (R1971)
- Rubber insulating line hose J6.1-1950 (R1971)
- Rubber insulating sleeves J6.5-1971

ASTM D120-02a, Specification for Rubber Insulating Gloves.  
ASTM D178-01\le1\, Specification for Rubber Insulating Matting.  
ASTM D1048-99, Specification for Rubber Insulating Blankets.  
ASTM D1049-98\le1\ (Reapproved 2002), Specification for Rubber Insulating Covers.  
ASTM D1050-90 (Reapproved 1999), Specification for Rubber Insulating Line Hose.  
ASTM D1051-02, Specification for Rubber Insulating Sleeves.  
  
F478-92(1999) Standard Specification for In-Service Care of Insulating Line Hose and Covers  
F479-95(2001) Standard Specification for In-Service Care of Insulating Blankets  
F496-02 Standard Specification for In-Service Care of Insulating Gloves and Sleeves

## Performance oriented language

- *the current ASTM standards, which contain details of the test procedures used to determine whether electrical protective equipment is capable of withstanding these voltages.*
- *These details have not been included in the proposed rule.*
- *Paragraph (a)(2)(i)(A) replaces them with a performance-oriented requirement that whatever test is used must reliably indicate that the equipment can withstand the proof-test voltage involved.*

## 1910.269 expected changes

- (11) Clothing. (i) The employer shall assess the workplace to determine if each employee is exposed to hazards from flames or from electric arcs.
- (ii) For each employee exposed to hazards from electric arcs, the employer shall make a reasonable estimate of the maximum available heat energy to which the employee would be exposed.
- (iii) The employer shall ensure that each employee who is exposed to hazards from electric arcs does not wear clothing that could melt onto his or her skin or that could ignite and continue to burn when exposed to the heat energy estimated under paragraph (l)(11)(ii) of this section.

- (iv) The employer shall ensure that an employee wears clothing that is flame resistant under any of the following conditions:
- (A) The employee is subject to contact with energized circuit parts operating at more than 600 volts,
  - (B) The employee's clothing could be ignited by flammable material in the work area that could be ignited by an electric arc, or
  - (C) The employee's clothing could be ignited by molten metal or electric arcs from faulted conductors in the work area.
- (v) The employer shall ensure that each employee who is exposed to hazards from electric arcs wears clothing with an arc rating greater than or equal to the heat energy estimated under paragraph (l)(11)(ii) of this section.

**A new Appendix F would be added to Sec. 1910.269**

- **II. Protection Against Burn Injury A. Estimating Available Heat Energy listed in Table 7.**
- **Table 8.--Available Heat Energy for Various Fault Currents, Clearing Times, and Voltages of 4.0 to 46.0 kV**
- **Table 9.--Available Heat Energy for Various Fault Currents, Clearing Times, and Voltages of 46.1 to 800 kV**
- **Table 10 presents protective clothing guidelines for exposure to electric arcs.**
- **Table 11.--Ignition Threshold for Cotton Fabrics**



Table 10.--Protection Clothing Guidelines for Electric Arc Hazards

| Range of calculated incident energy cal/cm <sup>2</sup> | Clothing Description (number of layers)                    | Clothing weight oz/yd <sup>2</sup> | ATPV  |
|---|--|------------------------------------|-------|
| 0-2   | Untreated Cotton (1)                                       | 4.5-7                              | N/A   |
| 2-5   | FR Shirt (1)   | 4.5-8                              | 5-7   |
| 5-10  | T-Shirt plus FR Shirt and FR Pants (2)                     | 9-12                               | 10-17 |
| 10-20   | T-Shirt plus FR Shirt plus FR Coverall (3)                 | 16-20                              | 22-25 |
| 20-40   | T-Shirt plus FR Shirt plus Double Layer Switching Coat (4) | 24-30                              | 55    |

# NFPA 70E Table 130.7(C)(11)

## PROTECTIVE CLOTHING CHARACTERISTICS

| <i>Typical Protective Clothing Systems</i> |   |                                       |   |
|--|---|---------------------------------------|---|
| <b>Hazard Risk Category</b>                | <b>Clothing Description<br/>(Typical number of clothing layers is given in parentheses.)</b>  | <b>Total Weight oz/yd<sup>2</sup></b> | <b>Required Minimum Arc Rating<sup>a</sup><br/>of PPE in cal/cm<sup>2</sup></b>                   |
| 0  | Non-melting, flammable materials (i.e., untreated cotton, wool, rayon, or silk, or blends of these materials) with a fabric weight of at least 4.5 oz/yd <sup>2</sup> (1) | 4.5-14                                | For use at up to 2 cal/cm <sup>2</sup> incident energy exposure, but materials have no arc rating |
| 1  | Flame-resistant (FR) shirt and FR pants or FR coverall (1)  | 4.5-12                                | 4   |
| 2  | Cotton underwear—conventional short sleeves and briefs/shorts, plus FR shirt and FR pants (2)   | 9-16                                  | 8   |
| 3  | Cotton underwear plus FR shirt and FR pants plus FR coverall, or cotton underwear plus two FR coveralls (3)   | 16-20                                 | 25  |
| 4  | Cotton underwear plus FR shirt and FR pants, plus multi-layer flash suit (3 or more)  | 24-30                                 | 40 <sup>b</sup>   |

| Range of<br>calculated<br>incident energy<br>cal/cm <sup>2</sup> | Clothing weight<br>oz/yd <sup>2</sup> | ATPV  | NFPA 70E<br>HRC/weight/ATPV<br>V |
|--|---------------------------------------|-------|----------------------------------|
| 0-2  | 4.5-7                                 | N/A   | 0 4.5-14 NA                      |
| 2-5  | 4.5-8                                 | 5-7   | 1 4.5-12 4                       |
| 5-10   | 9-12                                  | 10-17 | 2 9-16 8                         |
| 10-20  | 16-20                                 | 22-25 | 3 16-20 25                       |
| 20-40  | 24-30                                 | 55    | 4 24-40 40                       |

*These are just a few highlights of the proposed  
rule!*

*Are you prepared?*

## Some additional interesting electrically related developments

OSHA announced that it will not abandon its system for ensuring that electrical products used in the workplace are safe (NRTL's).

The European Union requested that OSHA explore the possibility of adopting its system, known as Supplier's Declaration of Conformity ("SDoC").

Under the EU system, manufacturers declare that their products meet safety requirements before placing these products on the market, thus requiring EU governments to operate a post-market surveillance system to verify whether products are safety compliant after they already are on the market.

## Some additional interesting electrically related developments

- Dec. 17, 2010 OSHA Press Release
- "OSHA's current system is a reliable and cost-effective approach to ensuring the safety of American workers," said Assistant Secretary of Labor for OSHA Dr. David Michaels. "A request for information did not reveal compelling evidence to abandon this system."
- Based on limited information obtained from post-market surveillance costs of two EU countries, OSHA estimated that implementing an SDoC system throughout the U.S. would cost hundreds of millions of dollars. OSHA also currently lacks explicit legislative authority to implement the enforcement powers required for an effective SDoC system, including issuing product recalls and bans, assessing fines, and imposing criminal penalties.

Any NFPA 70E Issues?

- Anyone still questioned on when OSHA will adopt 70E?

*Answer: Never!*



*Questions?*



Safe Travels &

Be safe out there!

Grizzly