



SECTION 51
NFPA 70E POLICY



1. Protection Against Arc Flash

- A.** Policy: An arc flash is a “dangerous condition associated with the release of energy caused by an electric arc.” An arc flash is an explosion causing severe burns, injuries and/or death depending on the severity.

Most workers realize that electrical shock is potentially life threatening, but many do not understand that wearing clothing that is not flame resistant can result in severe harm or death if it is ignited in an electrical arc flash.

- B.** Purpose: While it is the policy of Maul Electric Inc. to de-energize the power source before performing any work on the system, we understand that at times it is necessary to be exposed to the energy source (i.e. Investigative work). Before the point of exposure, we need to protect the worker from a potential arc flash that is always possible due to the presence of a power source. The means of proper PPE and levels of protection are simplified with the use of fire resistant garments that meet the hazard risks.

Keep in mind that the use of these suits, are only needed when you are being exposed to energy, or you are attempting to tie-in or are making contact with the power source. Once the potential for an arc flash is either removed or isolated, and the worker is protected, the protective suit is no longer needed (i.e. the panel cover is back on).

It is the policy of Maul Electric Inc. that all employees use the following PPE in order to protect themselves against Arc Flash occurrences.

- C.** Exposure: to under 600 volts:
1. Nomex full body jump suit
 2. Properly rated gloves
 3. Dielectric hard hat
 4. Full amber face shield
 5. Dielectric booties to slip over work boots
- D.** Examples of work performed at this level: (examples not intended to be all inclusive of every type of work!)
1. Removing any panel covers or barriers of energized equipment to perform investigative functions or inspections.
 2. Working in a panel with the line side energized and the panel cover removed.
 3. Installing a breaker into an energized electrical panel.
 4. Pulling cables or wiring into energized panels.



5. Pulling or installing fuses into energized parts.

E. Exposure to over 600 volts:

1. The level of protection for 600 volts and above will be a full body 40cal. High Voltage Suit complete with a full Head Hood, Dielectric booties, and properly ratted High Voltage gloves.
2. Examples: Work performed at this level: (examples not intended to be all inclusive of every type of work!)
 - a. Removing any gear covers or barriers of energized equipment to perform investigative functions or inspections.
 - b. Installing protective blankets or insulating devices on Buss work (i.e. rubbering up) in an active High Voltage Substation.
 - c. Racking in a breaker into an energized electrical cabinet.
 - d. Pulling cables or wiring into energized switchgear.
 - e. Pulling or installing cut-outs on a utility pole.
3. Contact your Foreman or supervisor to obtain a Maul Electric Inc. Arc Flash Protection Kit which will have all of the above mentioned PPE. Check the kits before use to insure that all of the high voltage PPE has a current inspection certification. Do not use if it has expired!

F. Employees shall be trained in safety-related work practices and procedural requirements as necessary to provide protection from the electrical hazards associated with their respective jobs. Employees shall be trained to identify and understand the relationship between electrical hazards and possible injury. Documentation shall be made when the employee demonstrates proficiency, be maintained for the duration of the employee's employment, and contain each employee's name and date of training.

1. Retraining. An employee shall receive additional training:
 - a. (or retraining) under any of the following conditions:
If the supervision or annual inspections indicate that the employee is not complying with the safety-related work practices
 - b. If 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
 - c. If he or she must employ safety-related work practices that are not normally used during his or her regular job duties
2. Retraining should be conducted within three years.



- G.** The contract employer shall advise the host employer of:

 - a. Any unique hazards presented by the contract employer's work,
 - b. Any unanticipated hazards found during the contract employer's work that the host employer did not mention, and
 - c. The measures the contractor took to correct any hazards reported by the host employer to prevent such hazards from recurring in the future.

- H.** Unqualified persons shall not be permitted to enter spaces that are required to be accessible to qualified employees only, unless the electric conductors and equipment involved are in an electrically safe work condition

- I.** Qualified personnel permitted to work within the Limited Approach Boundary of exposed energized electrical conductors and circuit parts operating at 50 volts or more shall, at a minimum, be additionally trained in all of the following:

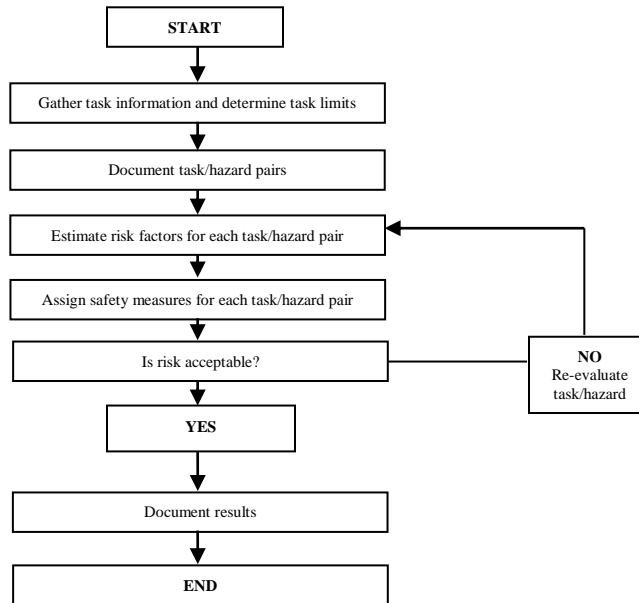
 - 1. The skills and techniques necessary to distinguish exposed energized electrical conductors and circuit parts from other parts of electrical equipment.
 - 2. The skills and techniques necessary to determine the nominal voltage of exposed energized electrical conductors and circuit parts.
 - 3. Only qualified persons shall perform tasks such as testing, troubleshooting, and voltage measuring within the limited approach boundary of energized electrical conductors or circuit parts operating at 50 volts or more or where an electrical hazard exists.
 - 4. The approach distances specified in Table 130.2 C and the corresponding voltages to which the qualified person will be exposed.
 - 5. The decision-making process necessary to determine the degree and extent of the hazard and the personal protective equipment and job planning necessary to perform the task safely.

- J.** Maul Electric Inc. safety related work practices for working within the Limited Approach Boundary are the following:

 - 1. Conduct daily evaluations and safety inspections through the shifts.
 - 2. Anticipating unexpected events and conduct a job hazard analysis.
 - 3. All electrical parts are considered live until zero energy is verified.
 - 4. Work permits shall be utilized and posted on site (i.e lockout/tagout & hotwork).
 - 5. Electrical flash arc hazard analysis will be conducted and the appropriate personal protective equipment indentified.



- K.** Hazard Analysis should contain event severity, frequency, probability and avoidance to determine the level of safe practices employed. A hazard/risk evaluation shall be completed before work is started within the Limited Approach Boundary of energized electrical conductors and circuit parts operating at 50 volts or more or where an electrical hazard exists.



- L.** A job briefing should be held before starting each job and include all employees involved. The briefing should cover hazards associated with the job, work procedures involved, special precautions, energy source controls, and PPE requirements
- M.** Test instruments, equipment, and their accessories shall meet the requirements of ANSI/ISA-61010-1-Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use -Part 1 General Requirements, for rating and design requirements for voltage measurement and test instruments intended for use on electrical systems 1000 Volts and below. When test instruments are used for the testing for the absence of voltage on conductors or circuit parts operating at 50 volts or more, the operation of the test instrument shall be verified before and after an absence of voltage test is performed.
- N.** All insulating PPE must be inspected before each day's use and immediately following any incident that can reasonably be suspected of having caused damage. Insulating gloves shall be given an air test, along with the inspection.



- O.** Such tests include:
 - a. Blankets-before first issue/every 12 months thereafter,
 - b. Gloves-before first issue and every 6 months,
 - c. Sleeves before first issue and every 12 months. Covers and Line hose shall be testing if insulating value is suspect.

- P.** Work on energized electrical conductors or circuit parts that are not placed in an electrically safe work condition, shall be considered energized electrical work and shall be performed by written permit only.

- Q.** Employees shall not enter spaces containing electrical hazards unless illumination is provided that enables the employees to perform the work safely. Where lack of illumination or an obstruction precludes observation of the work to be performed, employees shall not perform any task within the Limited Approach Boundary of energized electrical conductors or circuit parts operating at 50 volts or more or where an electrical hazard exists.