

Table 1. Electrical Hazard Ranges and Requirements, Rev. 4

Range [Notes 1 & 2]	Criteria (Perform selection process working from A to D)	Written Procedure	Permit for Working On or Near Energized Conductors [See Appendix II]	Training	Safety Watch and/or Two-Person Rule [Notes 6 & 7]
A Low-Hazard Operations [Notes 3 & 4]	(Injury not likely) are characterized by the following Ac and/or dc voltages less than or equal to 50 V; or All ac sources with less than 10mA rms available current; or All dc sources with less than 60mA available current; or Sources limited to an instantaneous release of less than 10 J of energy.	N/A	N/A	New Employee Orientation	N/A
B Medium-Hazard Operations	(Potential for severe injury or death) are characterized by voltages greater than range "A" hazard, but falling into either of the following Ac voltages less than or equal to 250 Vac rms; or Dc voltages less than or equal to 1000 Vdc; or Sources capable of an instantaneous release of greater than 10 J of energy.	Generic	Generic Issued by Department Chair/Division Manager or formal designee. [Note 5]	Relative to Task (maintain list of authorized personnel). BNL Electrical Safety Course and Lockout/Tagout Training.	N/A
C Hazardous Operations	(Potential for severe injury or death is greater) are characterized by voltages greater than range "B" hazard, but falling into either of the following Ac voltages less than or equal to 600 Vac rms; or Dc voltages less than or equal to 6000 Vdc.	Generic	Generic for testing, with generic procedure All else, Job-Specific Issued by Department Chair/Division Manager or formal designee. [Note 5]	Relative to Task (Document personnel who work on job). BNL Electrical Safety Course and Lockout/Tagout Training.	Two-Person Rule [Note 6]
D High-Hazard Operations	(Potential for severe injury or death is greatest) are characterized by voltages greater than range "C" hazard, as described below: Ac voltages above 600 Vac rms; or Dc voltages above 6000 Vdc.	Job-Specific	Job-Specific Issued by Department Chair/Division Manager or formal designee. Independent review required. [Note 5]	Relative to Task (Document personnel who work on job) BNL Electrical Safety Course and Lockout/Tagout Training. Cardiopulmonary Resuscitation (CPR)	Safety Watch (Total of 2 or more persons at worksite) [Note 7]

Note:

- In cases where electric devices do not fit clearly into any of the above ranges, a review by the line Department/Division and SHSD is required.
- Injury is possible from flash hazards and nonelectrical secondary effects.
- In general, sources above Range "A" are capable of delivering greater currents than 10 mA ac, 60 mA dc, and more than 10 J of instantaneous energy.
- Range A currents from "Effects of Electric Shock on Man," Charles F. Dalziel, Prof. Group on Med. Electronics (PGME), IRE Trans. on Med. Electronics, July 1956, vol. 5, pp. 44-62.
- Lockout/Tagout Procedures or accountable key interlock are the preferred methods to be used when working on these electrical circuits.
- The **Two-Person Rule** states that personnel will not work alone on energized circuits of Range "C" or "D". Both workers will be authorized and familiar with the approved procedures and emergency responses.
- A **Safety Watch** is a person trained in emergency response procedures; but not involved in the actual work in progress. The Safety Watch's sole function is to remain alert for potential hazards and summon assistance should the need arise. When feasible, the person should remain outside the control zone. When a safety watch is used to satisfy the Two-Person Rule, the Safety Watch will be an authorized worker.