

## APPENDIX D

**Table 130.3(A) Flash Protection Boundary.**

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For systems that are 600 volts or less, the Flash Protection Boundary shall be 4.0 ft, based on the product of clearing times of 6 cycles (0.1 second) and the available bolted fault current of 50 kA or any combination not exceeding 300 kA cycles (5000 ampere seconds). For clearing times and bolted fault currents other than 300 kA cycles, or under engineering supervision, the Flash Protection Boundary shall alternatively be permitted to be calculated in accordance with the following general formula:

$$D_c = [ 2.65 \times MVA_{bf} \times t ]^{1/2}$$

or

$$D_c = [ 53 \times MVA \times t ]^{1/2}$$

where:

- $D_c$  = distance in feet from an arc source for a second-degree burn
- $MVA_{bf}$  = bolted fault capacity available at point involved (in mega volt-amperes)
- $MVA$  = capacity rating of transformer (mega volt-amperes). For transformers with  $MVA$  ratings below 0.75 MVA, multiply the transformer  $MVA$  rating by 1.25
- $t$  = time of arc exposure (in seconds)

At voltage levels above 600 volts, the Flash Protection Boundary is the distance at which the incident energy equals  $5 \text{ J/cm}^2$  ( $1.2 \text{ cal/cm}^2$ ). For situations where fault-clearing time is 0.1 second (or faster), the Flash Protection Boundary is the distance at which the incident energy level equals  $6.24 \text{ J/cm}^2$  ( $1.5 \text{ cal/cm}^2$ ).

*Reference: NFPA 70E Standard for Electrical Safety in the Workplace (2004 Edition)*