

Arc Flash Group 1

Calculation Best Practices

Jackie McAlhaney

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Best Practices

- Data Acquisition for Performing Arc Flash Analysis
- Calculation Methodology
- Field Implementation/Labeling
- Qualifications of Personnel Performing Calculations

Data Acquisition

- Research single line diagrams, coordination curves, maintenance procedures, etc.
- Walk-downs to validate drawings and assess equipment condition
- Take pictures during field evaluation
- Apply confidence level to input data
 - Conductor size, trip settings, length, etc.
- Use accurate utility data for maximum and minimum fault conditions
- Consider all facility operating configurations to select worst case

Calculation Methods

- Use software model (SKM, ETAP, ArcPro, Bussman, EZPower, etc.)
 - Software validation (Latest version)
- IEEE 1584 Preferred method (Perform 100% and 85% arcing fault current calc for max and min conditions)
- Document assumptions
- Use tolerances for worse case
 - Cable lengths, Transformer impedance, Trip times
- Use realistic motor load contributions
- Verification of results
 - Independent review of inputs/outputs, Hand calculation
- Ownership of model should be formalized

Implementation

- Establish uniform labeling methodology
 - Standardize label information
 - Where to label
 - Color Coding label (Consider ANSI standard)
- Specific training necessary to understand label and how PPE is selected, including subcontractors
- Provide calculated results to work control
 - Perform pre-job briefing and cover PPE and boundaries
 - Include in work package
- Establish hazard category for switching operations with “covers on” (Future EFCOG initiative)

Qualifications

- Calculations under engineering supervision
- Peer reviews by qualified personnel
- Software training recommended
- Configuration management of model/analysis
 - Ensure utility and system mods incorporated
 - Software maintenance

Partnering with Others

- Corps of Engineers and Bureau of Reclamation
 - Best practices (Develop method to share)
 - Engineering Guides
 - Arc Flash Hazard Analysis Technical Guide (Draft)
- A/E Firms and Contractors Performing Arc Flash Analysis
 - Establish standard to communicate our design requirements and optimization for arc flash (iterative process)
 - Statement of Work for performing arc flash analysis