



BECKETT

ELECTRICAL SERVICES



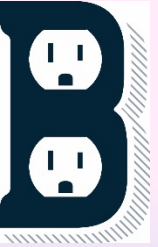


- Owner of Beckett Electrical Services LLC.
- Achieved Journeyman License at age 20
- Achieved Masters license At age 22
- 26 years total experience, 20 years as a master electrician and celebrating 16 years as an owner with his beautiful wife Maureen Beckett.
- Electrical apprentice instructor for 6 years
- OSHA Authorized Trainer

Beckett Electrical is proud to be a member of many association including AAFAME, IEC, ABC, & AGC.

Jesse Beckett,
Beckett Electrical Services, LLC
TECL#20254 / OSHA 10-30 Authorized Trainer
512-346-7462-Office 512-801-9934 Mobile
Jesse@Beckettelectrical.com



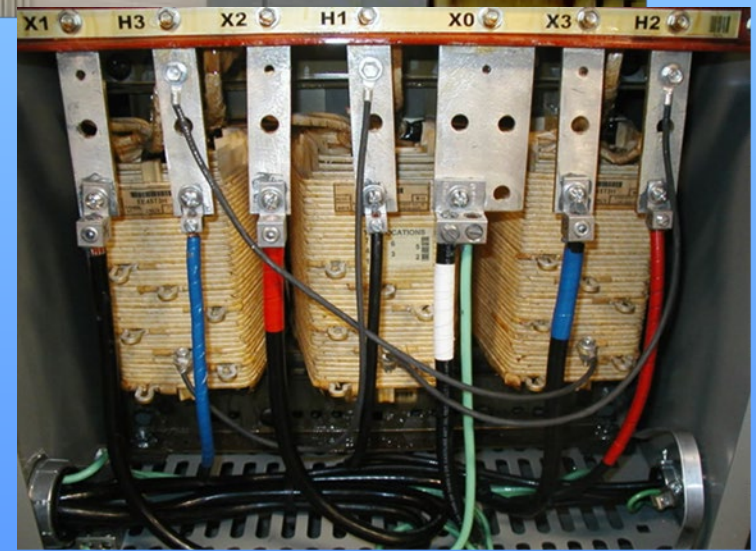


The Basics:

- Define what an ARC Flash / Blast actually is...
 - *An ARC Flash is a dangerous release of energy created by an electrical fault.*
 - [ARC Flash Video](#)

Faults commonly found in or in association with:

- Breakers
- Disconnects
- Motors
- Starters



Faults commonly found in or in association with:

- Distribution panels
- Bus Risers
- Transformers
- Switchgear

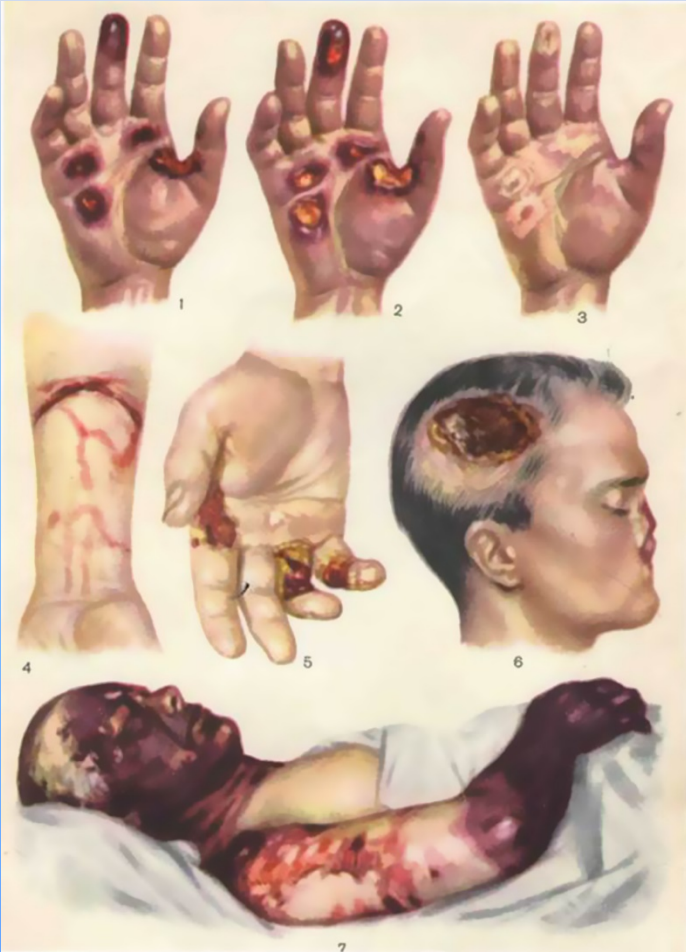




- The 3 most common hazards when working with energized electrical equipment include:
 - Electric Shock / Burns: When electrical current enters and exits the body creating a path
 - Arc Flash: A dangerous condition associated with the release of energy caused by an electric arc. (Contains Electrical energy, plasma, fragments and a spray of molten materials)
 - Arc Blast: Pressure wave caused by the expansion of gases and conducting materials with flying molten materials



Electric Shock / Burns



An Electrical current will produce an array of injuries if the current passes through the body.

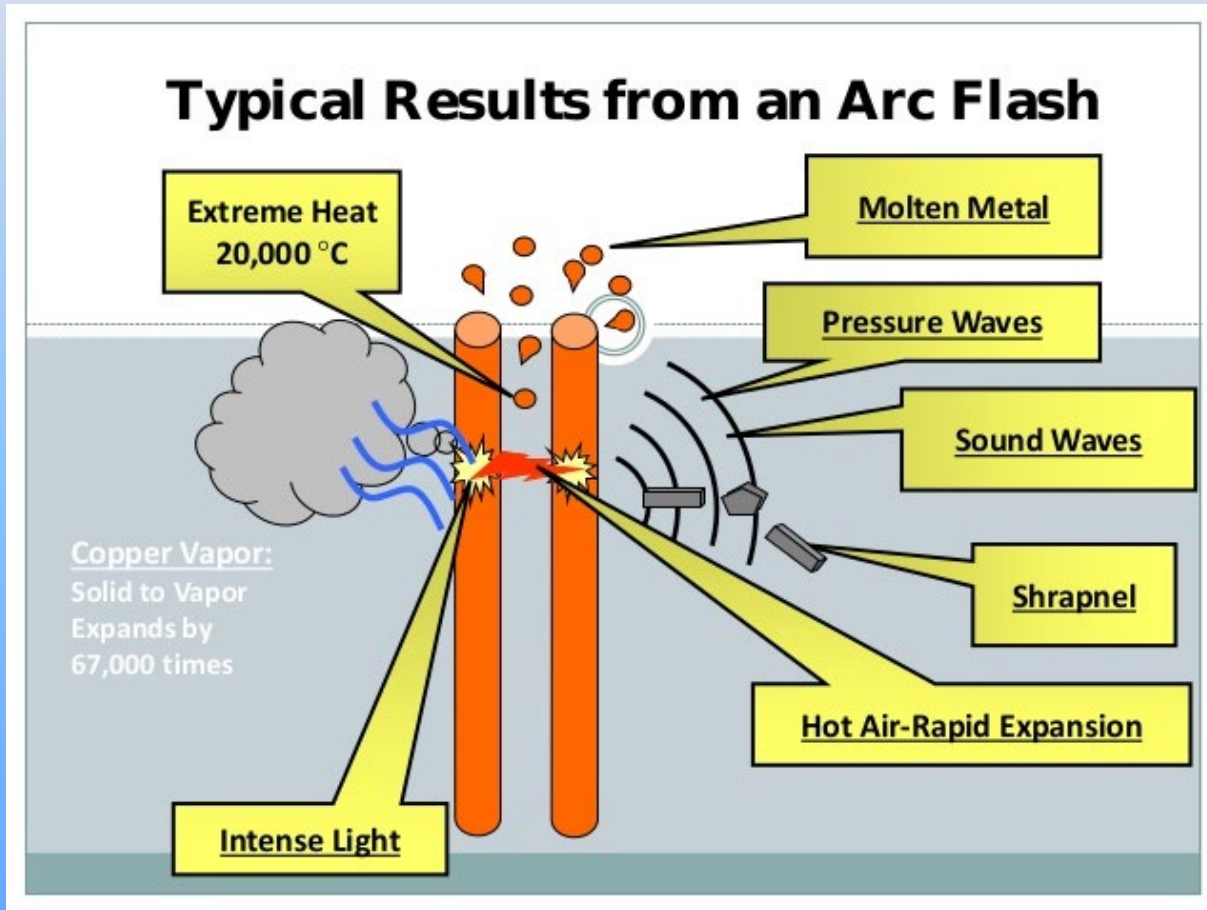
Most of the damage is beneath the skin surface and therefore the actual injury can easily be underestimated.

The pathway of current can be somewhat unpredictable, but, in general, current passes from a point of entry through the body to a grounded site, i.e. a site of lower resistance to flow compared with air, which is a poor conductor.

Extremely High Voltage sources usually exit in multiple areas in an explosive fashion.



Arc Flash





ARC Flash / ARC Blast

- Release will contain:
 - Thermal energy
 - Acoustical energy
 - Pressure wave
 - Debris
- Can reach 35,000 F
- Fatal burns >10 feet
- Majority of hospital admissions are arc flash burns, not shock
- **30,000** arcs and **7000** burn injuries per year





Variables that effect the size and energy of an electric arc flash:

- Amperage
- Voltage
- Arc Gap
- Closure time
- Distance away from arc
- 3 phase v single phase
- Confined space





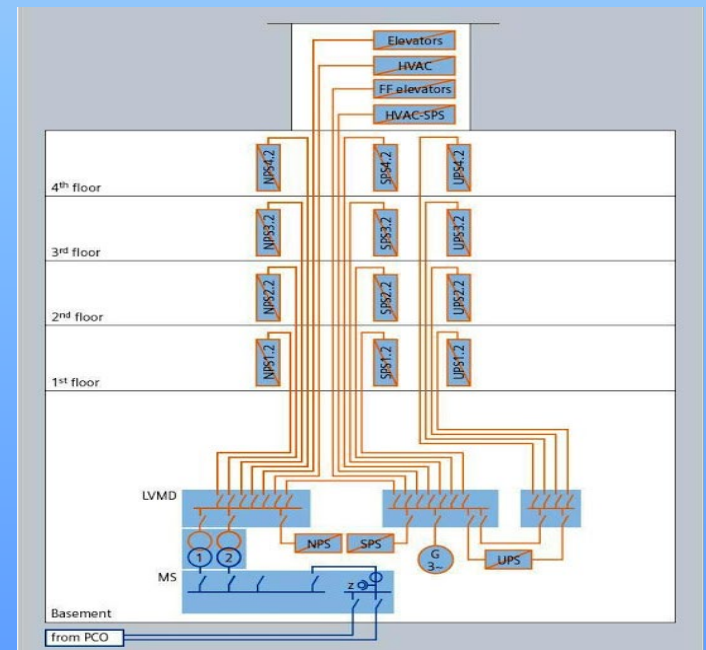
Assessment / Maintenance/ Coordination

- What can you do to protect yourself from these very real hazards.

The three important categories for you to remember;

1. ARC Flash Assessment

- Labeling & Hazardous Communication Plan
 - Approach boundaries
 - PPE required
- Single Line Diagrams that are up to date and accurate





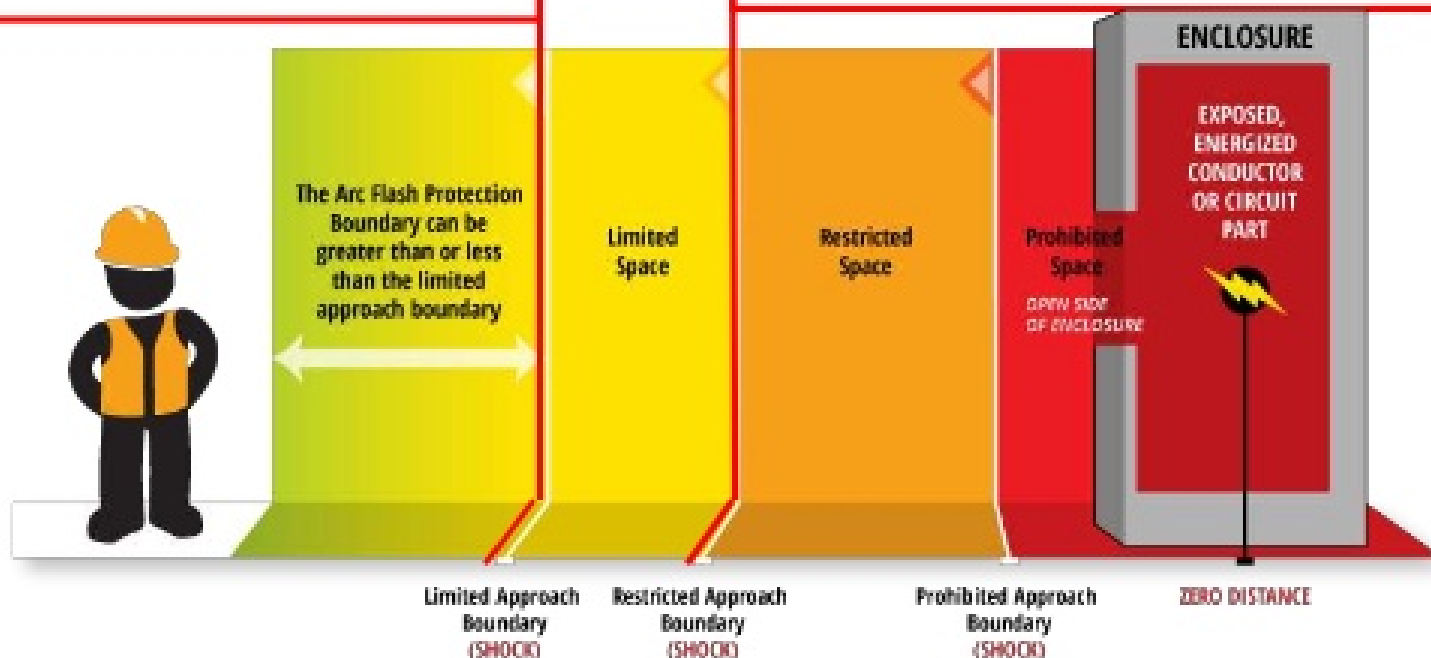
Approach Boundaries

Limited Approach Boundary

The Limited Approach Boundary is the distance from the live part to which **unqualified persons** may approach unaccompanied. To cross the Limited Approach Boundary, **unqualified persons** must be accompanied by a qualified worker wearing the appropriate Voltage Rated PPE and trained on the task to be performed.

Restricted Approach Boundary

The Restricted Approach Boundary may only be crossed by **qualified workers** with appropriate Voltage Rated PPE and training on the task to be performed. In addition, the worker must have an approved work permit and written plan for the task. The plan should include shock-prevention procedures designed to keep all portions of the worker's body from crossing the Prohibited Approach Boundary at any time.





Assessment / Maintenance / Coordination

2. Preventive Maintenance / ARC Flash Training / PPE Plan

- Periodic checks and servicing of your electrical services is the best way to make sure a failure is not looming in your future.
- Making sure that only trained and qualified personnel have access to these services, and in return they have correct protection in place

- Employer must develop and enforce safety-related work practices to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts.



These safety related work practices could include:

- Energized Electrical Work Permit
- Pre-work Job Briefing
- Personal Protective Equipment
- Insulated Tools
- Written Safety Program
- Qualified Person Training
- Flash Hazard Labeling





Assessment / Maintenance / Coordination

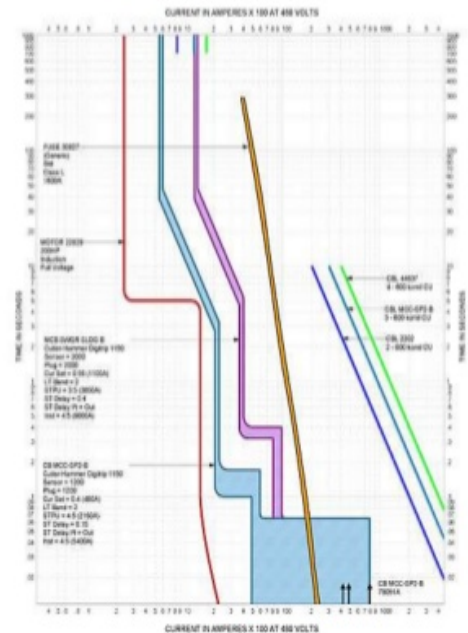
3. Short Circuit & Coordination studies

- Documentation
- Reviews of the programs that support your safety plan.

Short Circuit Calculations & Studies

Advantages of Short Circuit Studies

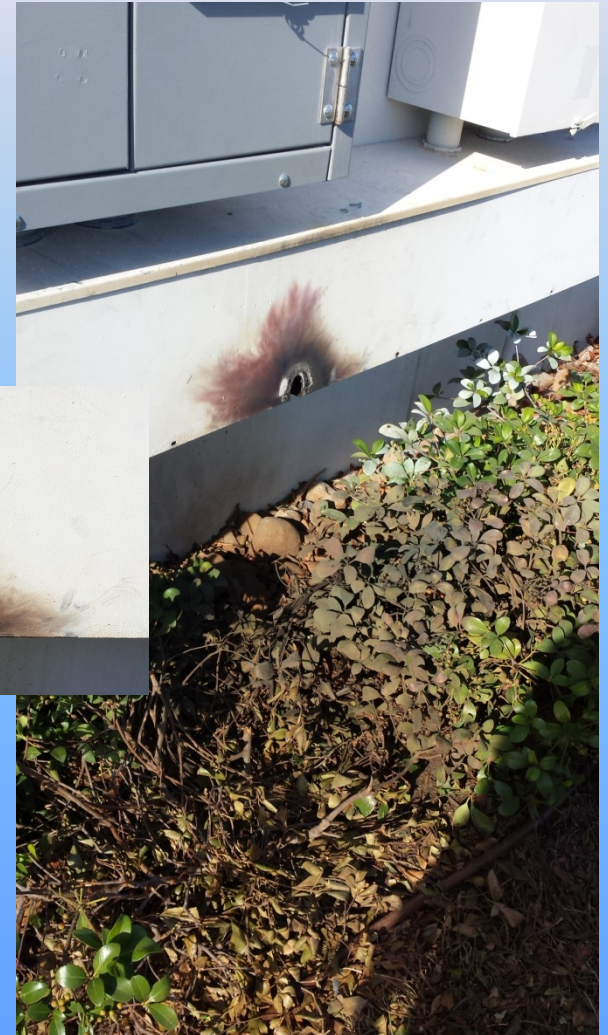
- Reduce the risk a facility could face and help avoid catastrophic losses.*
- Increase the safety and reliability of the power system and related equipment.*
- Evaluate the application of protective devices and equipment.*
- Identify problem areas in the system.*
- Obtain recommended solutions.*



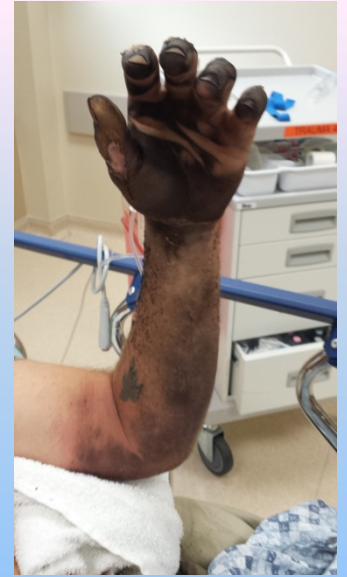


Case Study: 9-9-13

Gutter Cover closed w/ self tapping screw



Case Study: cont.





Why is this important to you?

- Building engineers are often first responders to an electrical outage since most are onsite at the facility.
- Pressure from tenants, managers, peers, and owners to reestablish power.
- Complacently
- Simply, may not be aware of the potential hazard.



We use C.U.S. words!

- C-Concerned
- U-Uneasy
- S- Safety
- If you feel any of these things...stop, assess and evaluate.
- Qualified electrician will prevent exposure to hazards and potential irreversible damage to equipment .



OSHA Authorized Training

- Beckett offers OSHA 10/30 Hour training authorized through OSHA
- Congratulations for taking advantage of this awesome training opportunity we offer to our customers

Thank You, and we look forward to helping you with all your electrical needs.

