Inside an Arc Flash Loss

Purpose of this material is to illustrate the multitude of probable realities resulting from an arc flash explosion loss. The scenario is modeled after an actual loss* – the facts and subsequent realities presented here to concluding this type of loss are real.

*The actual loss used as the model for this discussion occurred 1 year ago. All liability issues remain outstanding. Injuries to lead employee on site prevented any discussions with him for 4 ½ months. Total value of the loss is in excess of $1,000,000. Related loss expenses estimated in excess of $150,000.

Inside an Arc Flash Loss

I. Scenario – you are hired to install upgraded service at a facility. Common parties involved include:

- Local Utility Company
- Facility Owner
- Facility Tenant
- You

a. When contract for this job, do you understand, recognize, and/or appreciate the potential risk if something doesn’t go right?

As the job is being complete, the final panel cover is being re-installed when – BANG!! An arc flash explosion occurs.

II. What are the likely damages and injuries that can result?

a. Damage to the facility structure
b. Damage to other property at the facility – e.g. machinery and furnishings
c. Damage to your property at the facility
   i. Property contracted to install
   ii. Other tools and equipment
d. Injuries to your employees
e. Injuries to the facility’s employees

The scope and cost of these damages and injuries can expand very quickly!

a. Damage to the Facility Structure
   i. Temporary repairs/shoring
      1. Safety and security of the property
      2. Allow facility to keep operating
   ii. Actual cost of repairs – including lead time for permits, contractors, materials
   iii. Replacing power supply to facility
1. Likely to involve some temporary measures until cause of the arc can be determined
   iv. Debris Removal and Clean-up – any hazardous materials considerations?

b. Damage to Other Property at the Facility
   i. Cost/value of repairs or replacement – availability considerations...
      1. Lead-time for replacement property
      2. Expediting expenses
      3. Temporary solutions
   ii. Downtime / Lost Value of Production
      1. Function of availability of repairs/replacement - lead-time, expediting expenses, temporary solutions
      2. Loss of customers, market share, competitive advantage in market

c. Damage to Your Property
   i. Property contracted to install – you’ve purchased but have not been paid for
   ii. Value of your work product – you’ve completed work do date and paid your employees but have not been paid for the job
   iii. Trade tools and equipment on site may have been damaged or destroyed

   All need to be paid / replaced by you at some point...

d. Injuries
   i. Nature of Resulting Injuries
      1. Burns – often significant, 2\textsuperscript{nd}/3\textsuperscript{rd} degree
      2. Body – face, hands, arms, upper body; sight, hearing, scarring
   ii. Who’s Injured?
      1. Facility Employees – typically maintenance/engineering staff
         a. Work Comp claims – medical, wages, rehab
         b. Bodily Injury claims – pain & suffering, disfigurement, etc.
      2. Your Employees
         a. Work Comp claims – medical, wages, rehab, death benefits
      3. You
         a. Work Comp? (typically excludes owners & officers)
         b. Health Insurance
         c. Disability income
         d. Life Insurance

e. Vast majority of these expenses can be covered by insurance – but not all
The direct results are the immediate concern for all parties involved – injuries and damage. Will also need to determine...

III. What happened? The investigation...
   a. Who’s involved?
      i. OSHA
         1. Potential additional costs involved – administrative citations/fines
      ii. Insurers
         1. Property insurers
         2. Liability insurers
         3. Work Comp insurers
         4. and their experts – forensic electrical engineers
      iii. Plaintiff Attorneys
      iv. Direct parties – owners, tenants, operators, employees, etc.
         1. With employees...what is extent of injuries? When/can they contribute to investigation?

Can require significant time and effort to ultimately resolve

b. Preserve the scene
   i. Cannot commence clean-up or repairs until investigation completed
   ii. Can be an extended timeline to coordinate schedules of all experts
   iii. Facility needs to commence repairs, continue operations => temporary accommodations, repairs, and other work-arounds must be completed beyond what’s actually needed for direct repairs

c. Investigation results -
   i. All direct parties will have a different experience in the moment of when the loss occurs and the effort after
      1. True for any accident – auto, trip & fall, this explosion, etc.
   ii. Some element of self-preservation always present
      1. “not my fault”
      2. “I didn’t do anything wrong”
      3. “I did ‘this’, but someone else did…”
   iii. Not only what individuals did – their direct actions, but also what are the skills/training/history of these individuals
      1. Qualified? Should they have been there in the first place?
      2. Think “faces of your business”...

d. Cause? – commonly seen root causes...
   i. Working “hot”
1. Negligence – did something wrong, should have known not to do something that caused explosion
2. Ultra hazardous operations - limited defenses
   ii. “I thought power was off” “Power was supposed to be shut off”
   1. Verify/confirm before beginning work
iii. Trouble-shooting reason for service call
   1. Unexpected result/failure

IV. Who Pays?
   a. Never clear cut...
      i. Plaintiffs pursuing damage and injury claims – suing everyone
      ii. Insurers pursuing recovery of damages and injuries paid – from everyone
      iii. You – in the middle, defending against all of these claims and/or pursuing your own claims against others
      iv. Contracts – hold harmless, waiver, indemnity, additional insureds
         1. Complex, not always effective, don’t anticipate all risks/potential results
         2. OSHA doesn’t care...
   b. Can bring in still more parties...
      i. Component suppliers and manufacturers
      ii. Previous contractors, owners, etc. – what was done in the past
   c. Litigation is a common outcome
      i. Attorneys
      ii. Lawsuits
      iii. Trials
      iv. Judges
      v. Juries
      vi. Experts
      vii. Witnesses - you and your employees
   d. YOU – administrative costs associated throughout this process...
      i. Your direct loss items – damages and injuries
      ii. Investigations – Interviews - Inspections
      iii. Depositions/legal discovery
      iv. Trial

Indirect costs associated with your business...
   i. Future insurance costs with higher experience rating
   ii. Cost to hire and train replacement employees
   iii. Professional reputation / negative publicity
   iv. Employee morale, productivity, quality
v. Loss of customer relationships and goodwill

V. Is it worth it?
   a. YES – if understand, appreciate, and effectively manage the risk
      i. Don’t work ‘hot’ – confirm, don’t assume
      ii. Lock out-tag out
      iii. PPE required
      iv. Off peak times to minimize interruption
      v. Temporary / bypass supply and/or circuits to isolate the contracted work