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IMDG, TDG, MSHA, OSHA, and
Canada OHS Regulations and
Safety Online Training**

Since 2008

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I'll Be Done in a Flash!

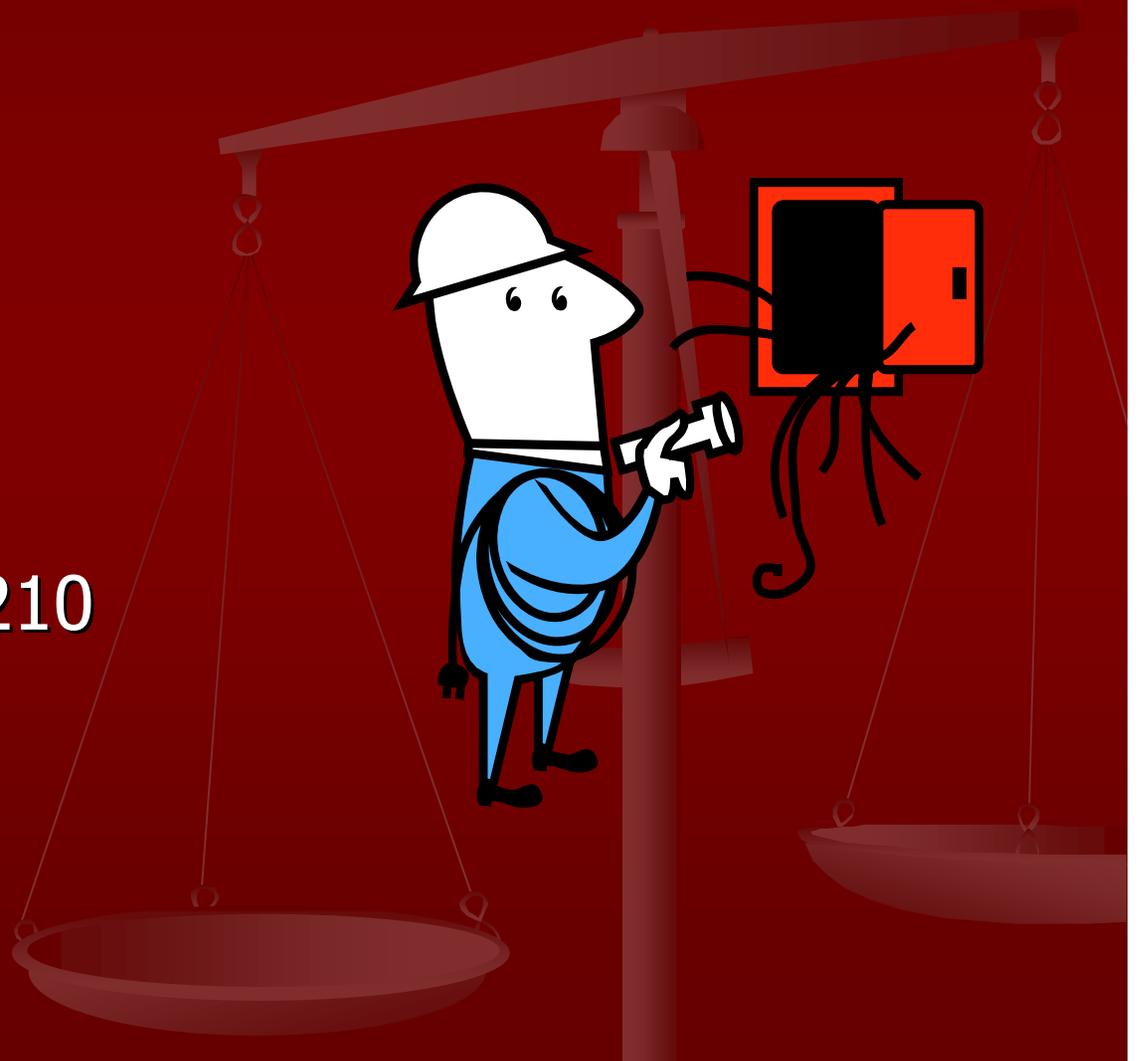
An Arc-blast Incident

Presented by:

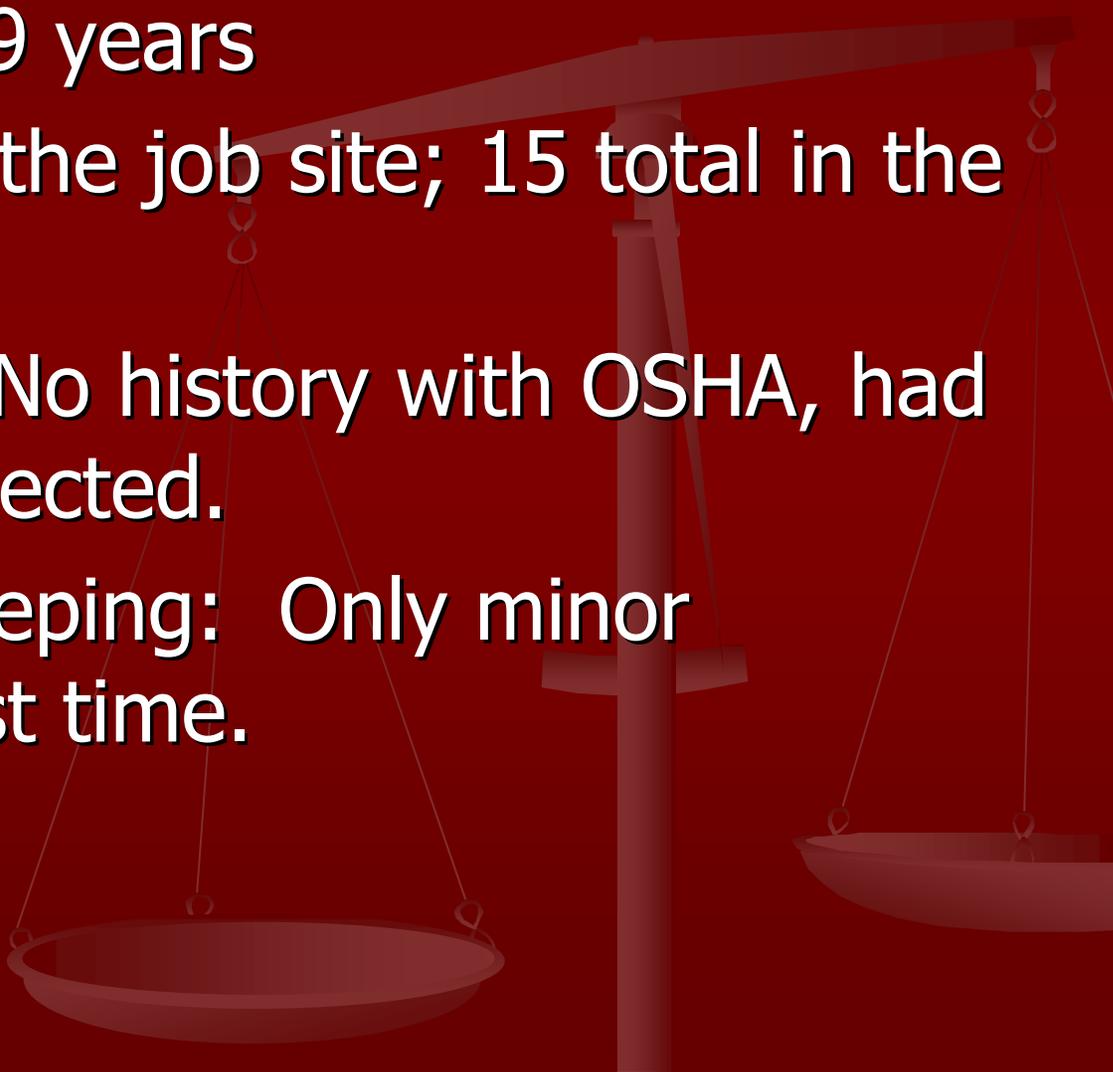


Company Information

- ELECTRICAL CONTRACTOR
 - Residential
 - Commercial
 - Light Industrial
- SIC Code: 1731
- NAICS Code: 238210
- Service branch performs maintenance

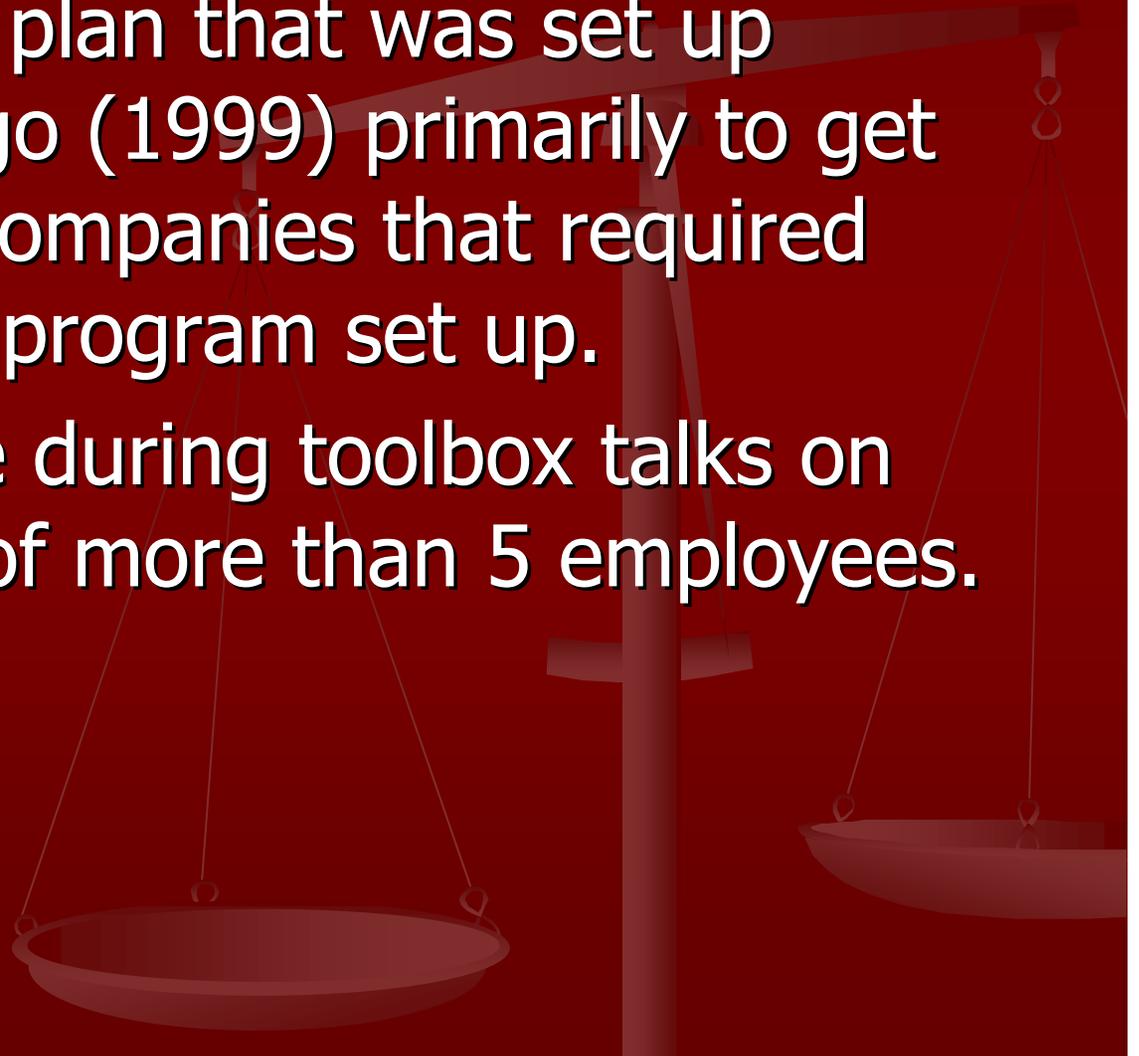


Company Information

- In business for 9 years
 - 2 employees at the job site; 15 total in the Company
 - OSHA History: No history with OSHA, had never been inspected.
 - OSHA Recordkeeping: Only minor incidents, no lost time.
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Safety Program

- Company has a plan that was set up several years ago (1999) primarily to get contracts with companies that required them to have a program set up.
- Training is done during toolbox talks on larger projects of more than 5 employees.

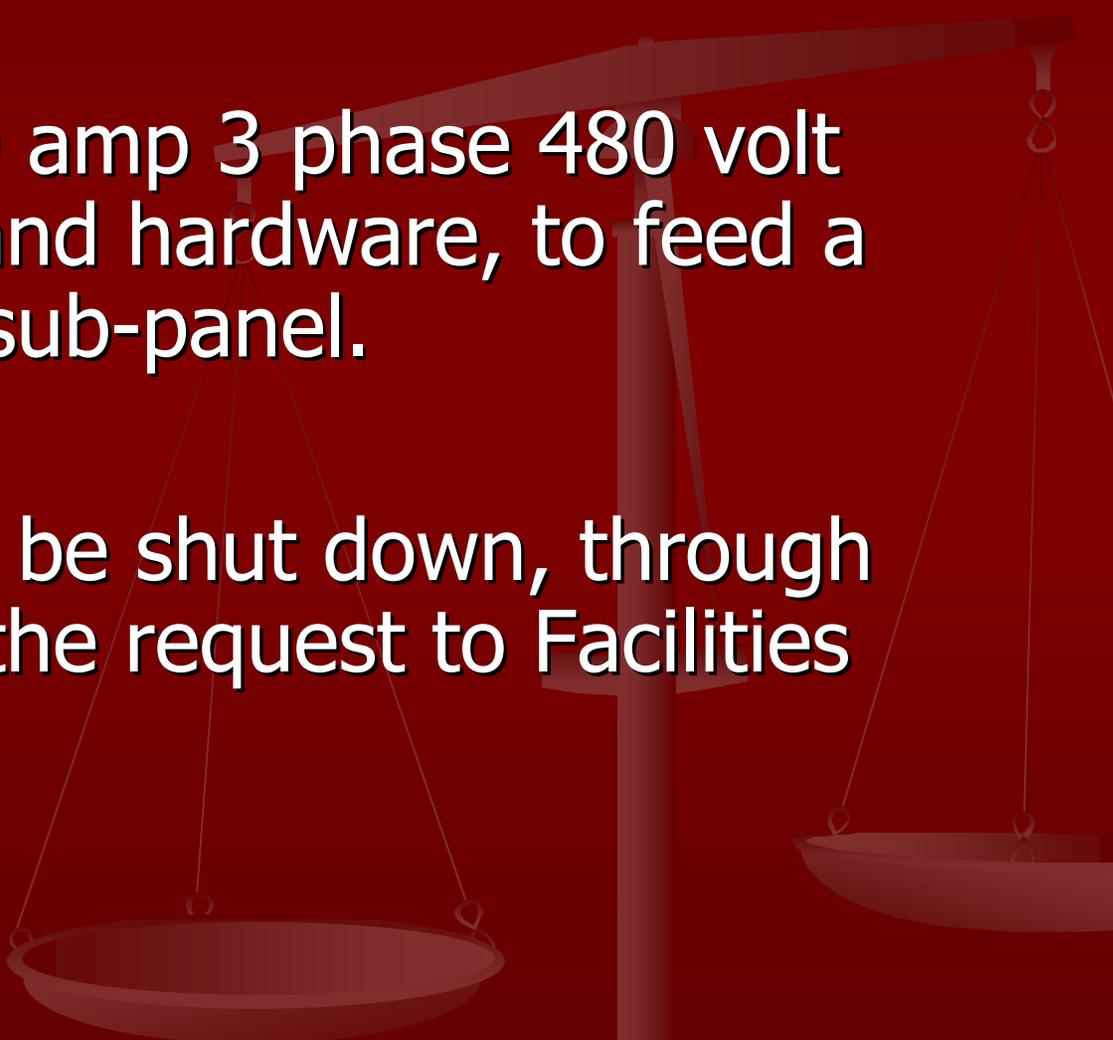


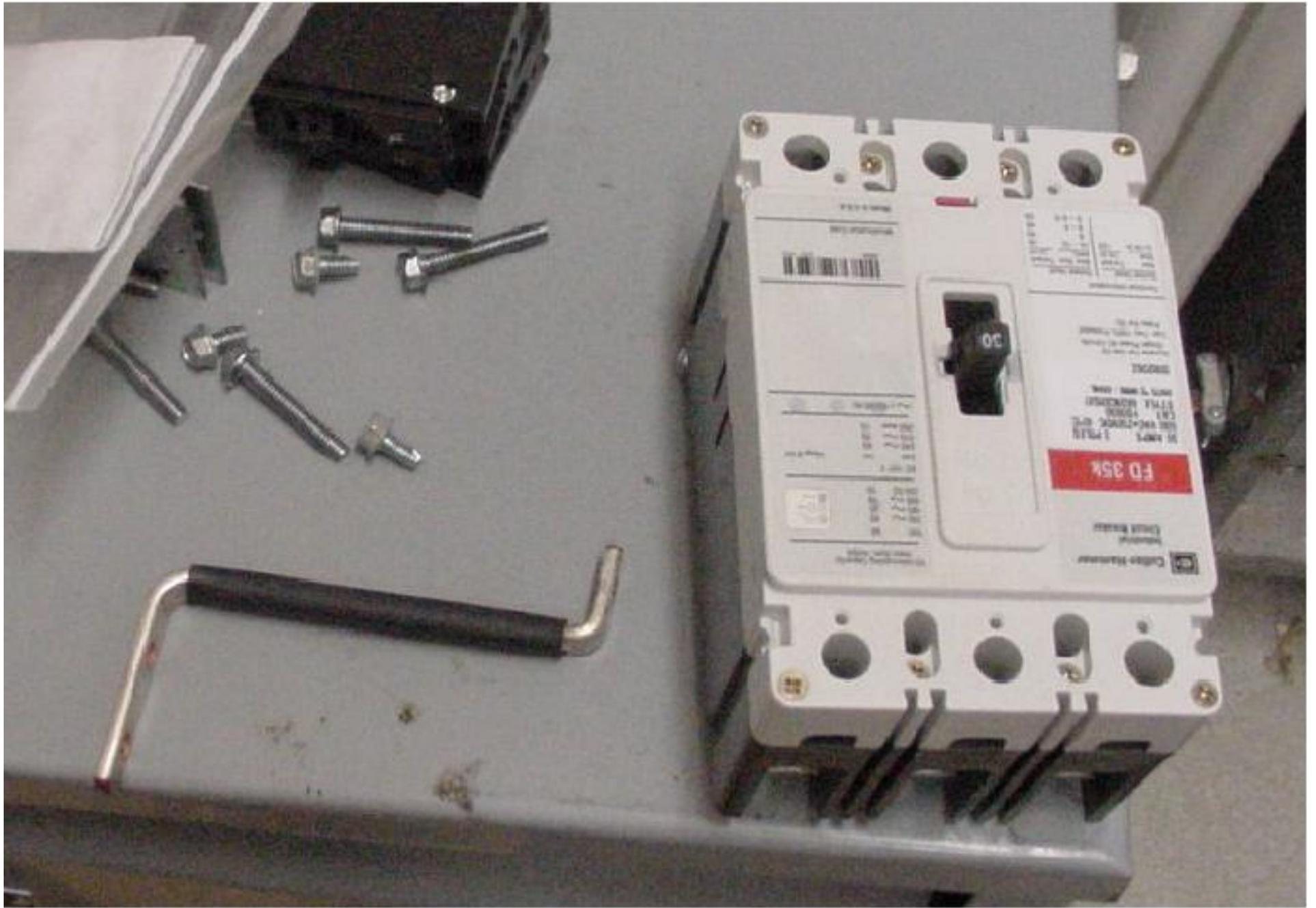
Work to be Conducted

- Removal of malfunctioning existing 3 phase 480 volt circuit breaker and hardware (fingers, contacts) from a Westinghouse 1,000 amp 3 phase 480 volt Main Distribution Panel (MDP).



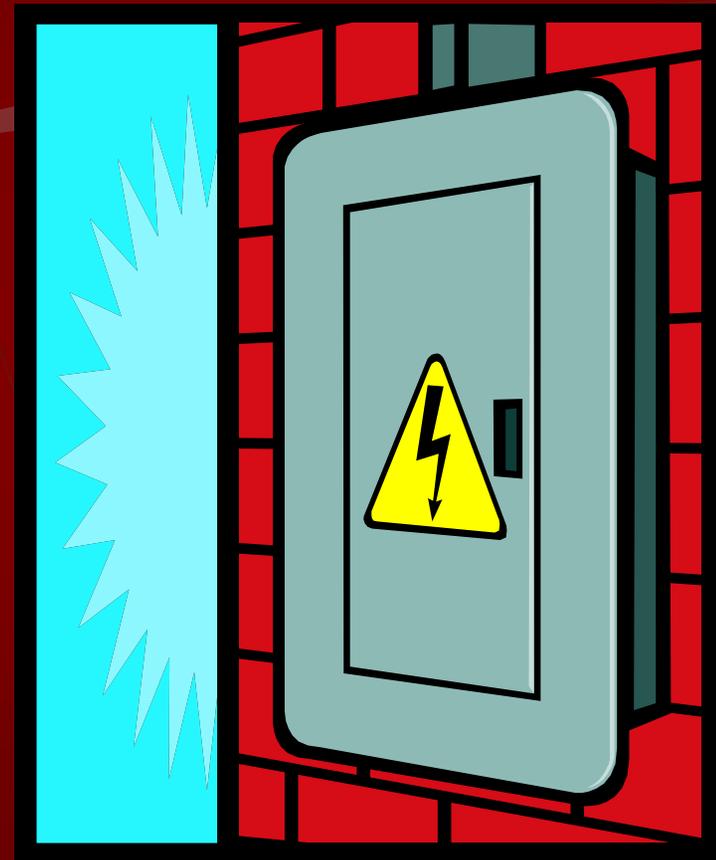
Work to be Conducted

- Install a new 30 amp 3 phase 480 volt circuit breaker and hardware, to feed a newly installed sub-panel.
 - Requested MDP be shut down, through GC, who made the request to Facilities Management.
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Work Site History

- FM did not want to shut down power and asked to find an alternate power source not affecting the MDP.



Work Site History



- FM and electrical contractor met to find an alternative. They thought they could get to a second source based on location (did not open walls or ceilings to determine).

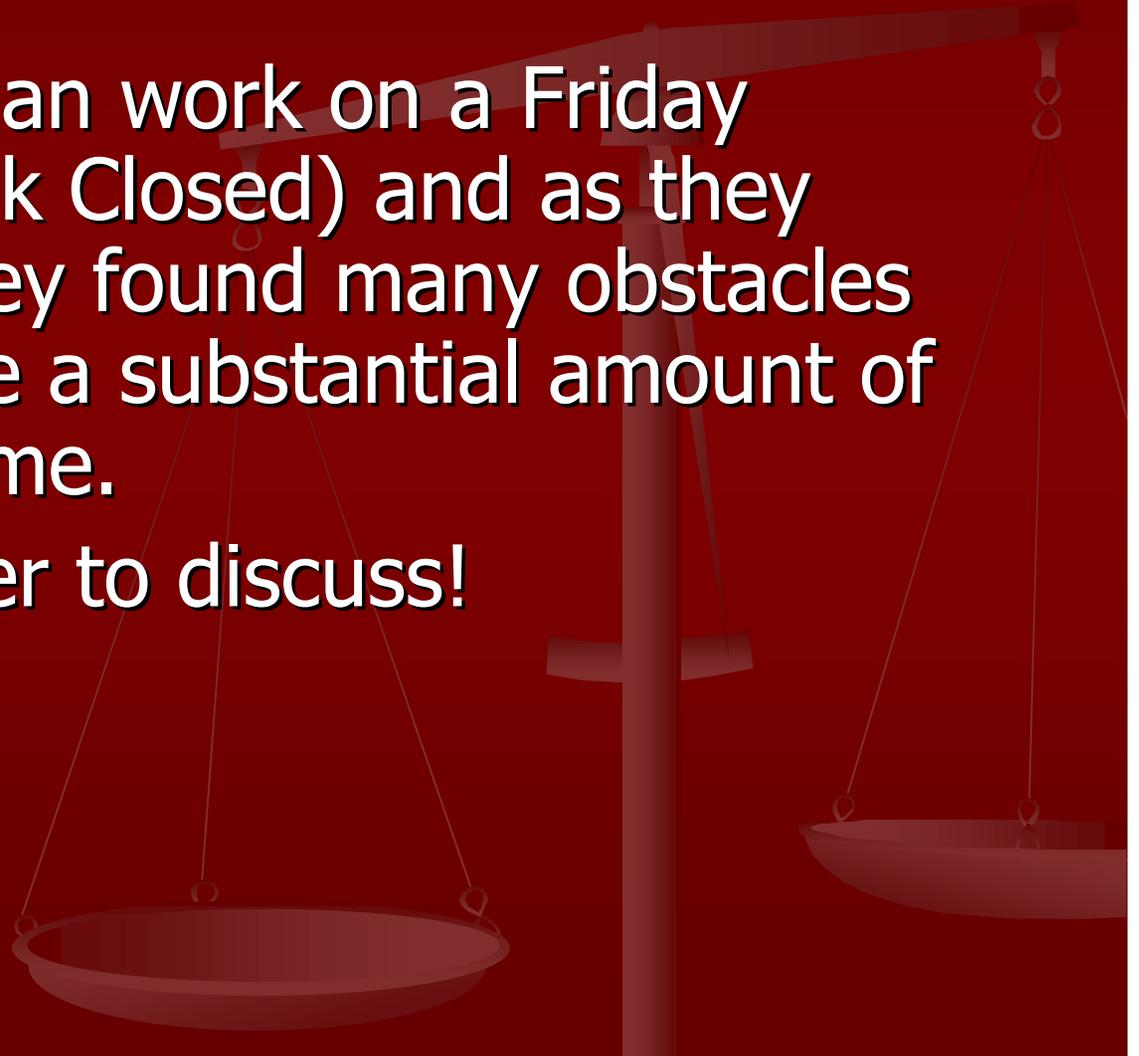
Work Site History

- FM advised EC that they were behind schedule and needed to expedite the work (had to be completed ASAP).



Day of the Incident

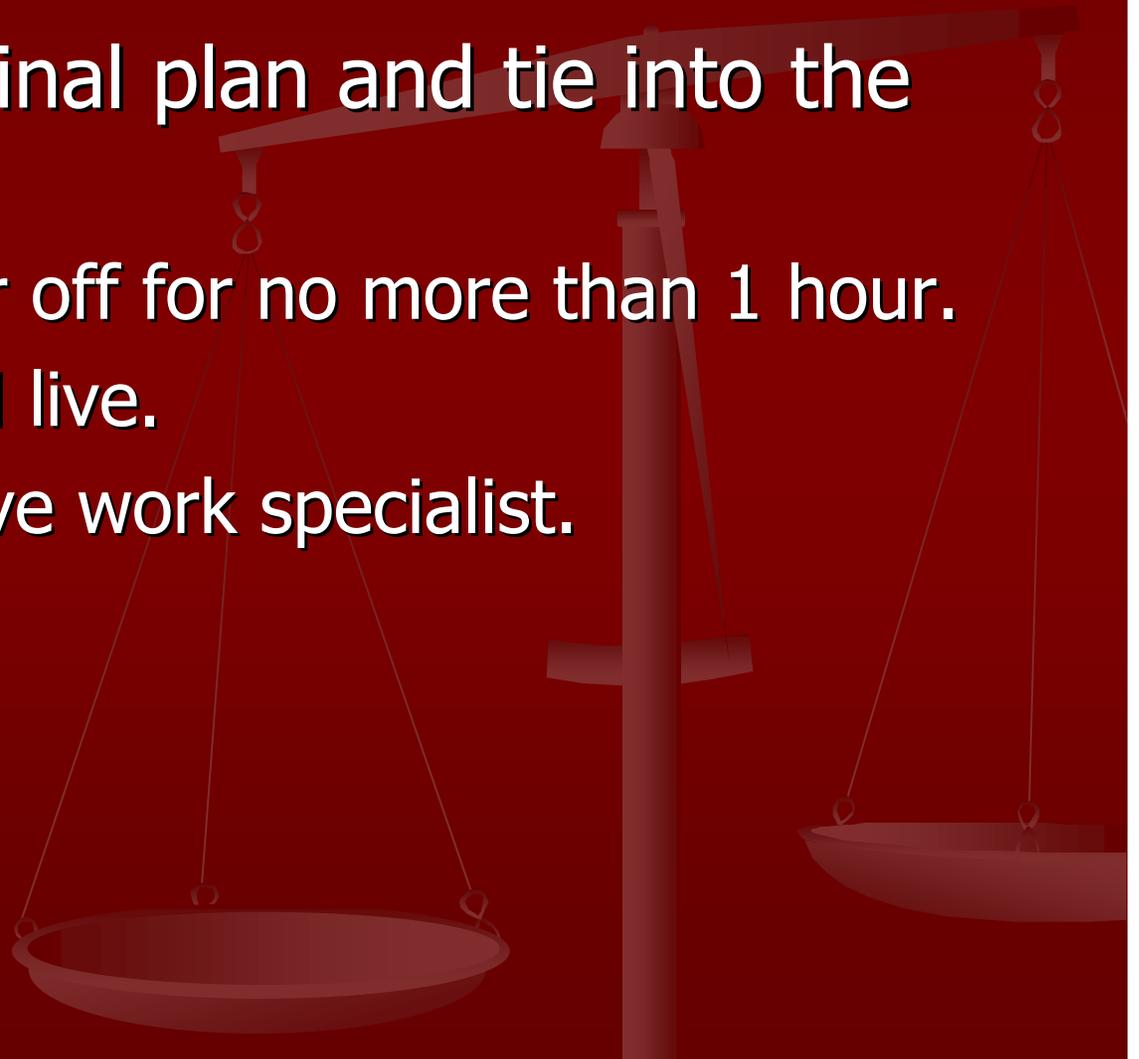
- Work crew began work on a Friday afternoon (Bank Closed) and as they progressed, they found many obstacles that would take a substantial amount of time to overcome.
- EC called Owner to discuss!



Choices to be Made

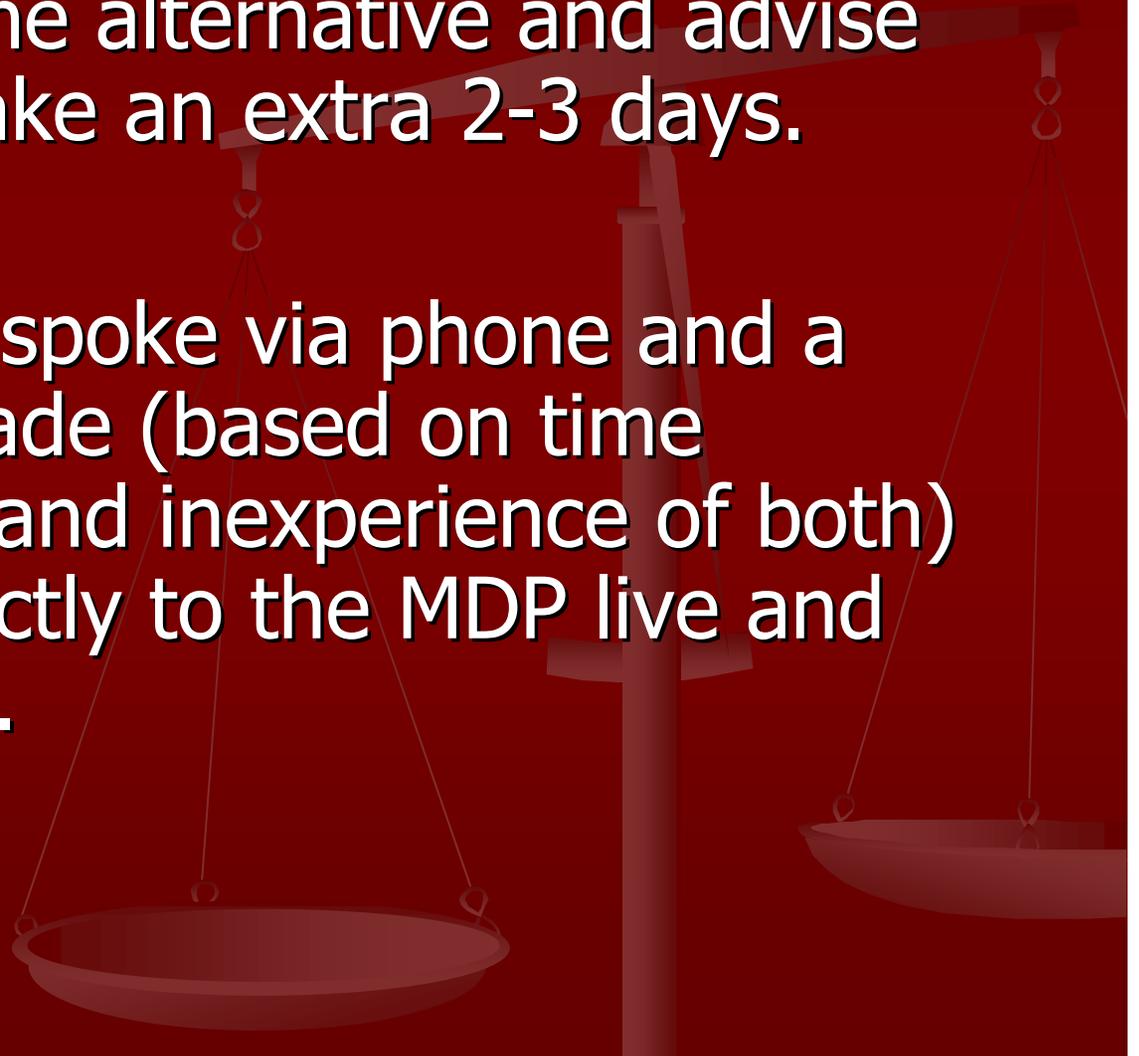
- Go back to original plan and tie into the MDP.
 - Shut the power off for no more than 1 hour.
 - Work the panel live.
 - Sub-contract live work specialist.

OR



CRITICAL CHOICE

- Continue with the alternative and advise GC that it will take an extra 2-3 days.
- The FM and EC spoke via phone and a decision was made (based on time element of GC, and inexperience of both) to connect directly to the MDP live and not de-energize.



CRITICAL CHOICE



Incident Information

- The Crew (Master Electrician and (Journeyman Electrician) began work on the MDP, removing the old breaker and contacts (fingers)



Incident Information

- With just the use of a pair of Salisbury Class 1 Type 1 electrical gloves and a pair of Kunz insulated glove protectors, as the only Personal Protective Equipment being used.



Incident Information

- The Journeyman began to loosen one of the “fingers” when it began to shift in the direction of a second “finger”.



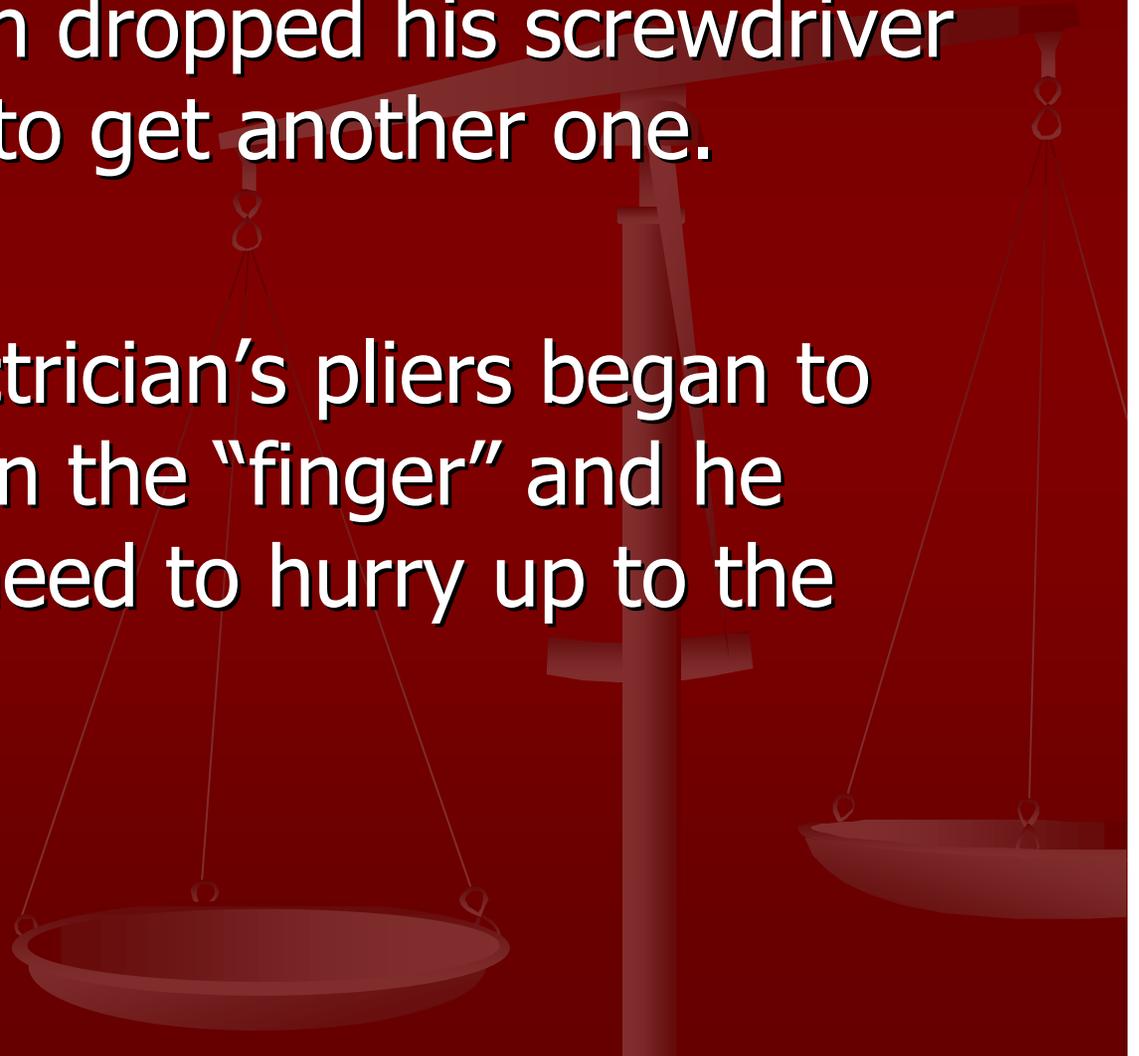
Incident Information

- The Master Electrician grabbed a pair of pliers and the left glove to secure (keep from moving) the “live finger” while the screw was being removed.



Incident Information

- The Journeyman dropped his screwdriver and proceeded to get another one.
- The Master Electrician's pliers began to lose their grip on the "finger" and he expressed the need to hurry up to the foremen.



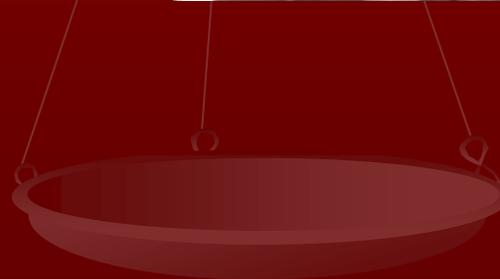
Incident Information



- As the Journeyman was bent over looking for the screwdriver, the Master Electrician's grip failed causing the "finger" to buck the other two phases as well as the grounded cabinet.

Incident Information

- An Arc-Blast occurred leaving both men in a daze and trying to exit the utility room as quickly as they could.



What is an Arc Blast?

- High Amperage Current arcing through air. This is initiated by contact between two energized points (generating intense heat, light, sound and pressure!).



What is an Arc Blast?

- Three Primary Hazards
 - Thermal Radiation - Serious Burns



What is an Arc Blast?

Three Primary Hazards

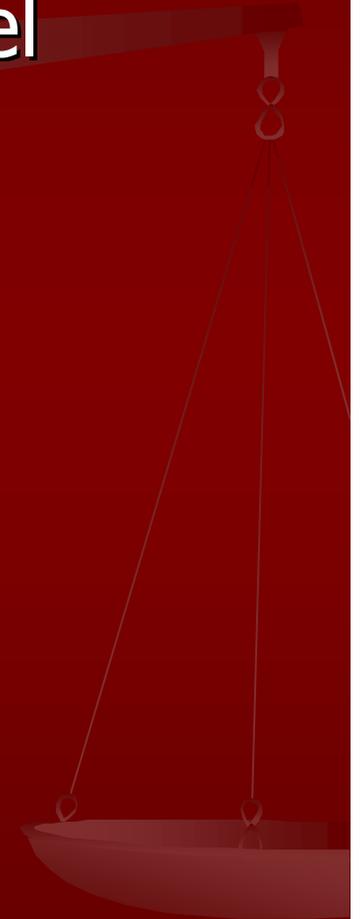
Pressure Wave - Possible Concussion



What is an Arc Blast?

Three Primary Hazards

Projectiles - Molten droplets & Shrapnel

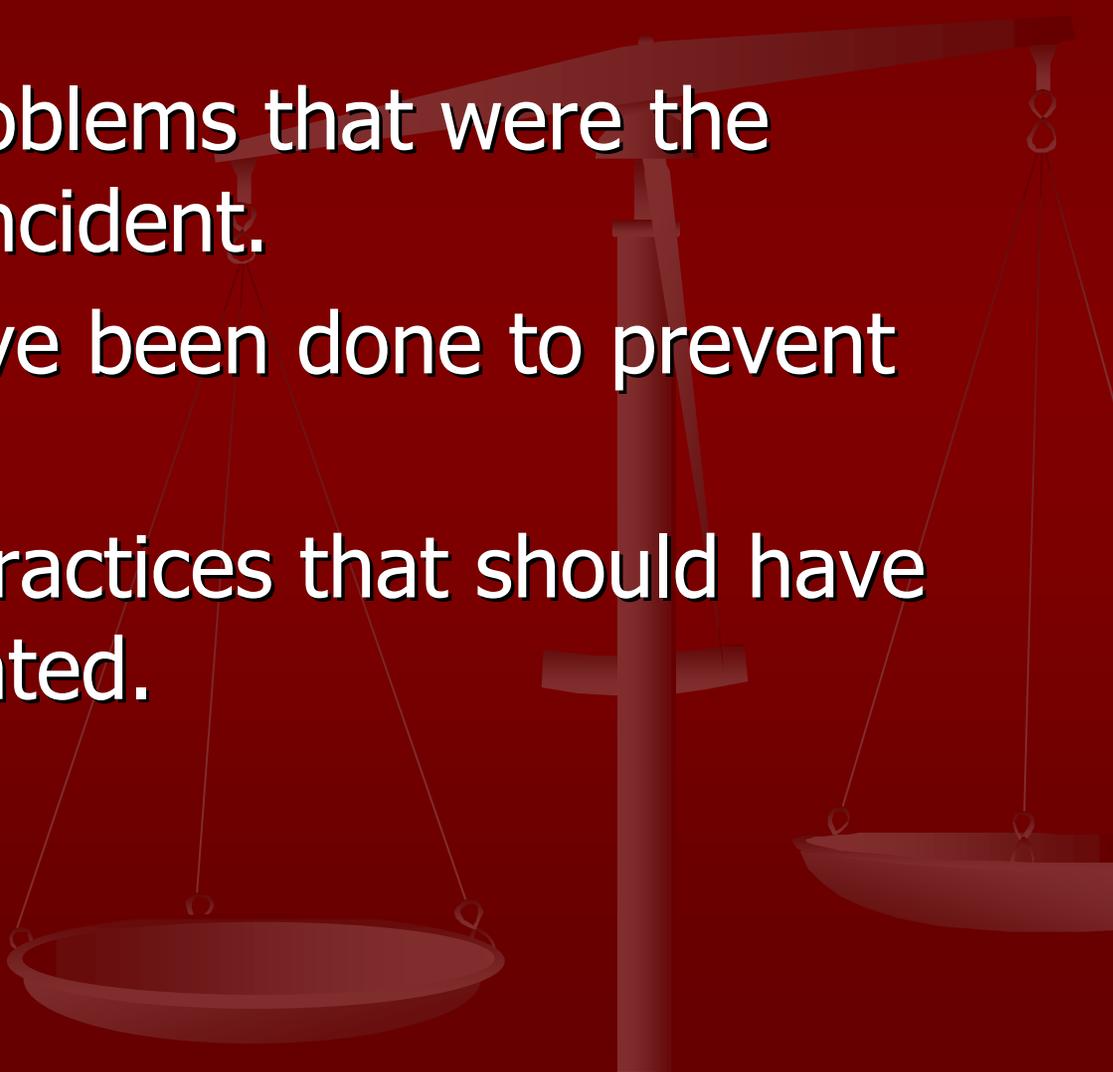


Effects of the Incident

- Both men were seriously burned and were transported by Helicopter and Ambulance to the Burn Center.



Group Discussion

- Identify the problems that were the source of the incident.
 - What could have been done to prevent this incident?
 - List the work practices that should have been implemented.
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Credit

- **Credit: Edward M. Norton,
Safety Specialist**
- **U.S. Department of Labor / OSHA
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