Local No. 104
Occupational Safety
Health and Education Trust Fund

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Project: Energized 115kv insulator change out and static replacement; circuit runs within a railroad ROW; rail traffic diverted during line work.

Crew: 1 Foreman, 6 JLs, 1 Groundman, 1 Welder

Important background information:

* MAD of 3'9" had been reduced to 3'2" by TOV provided by host utility.

* The accident occurred on the first day of this project and after returning from multiple days on storm with a day of rest in between.

* Mono pole structures, single circuit, conductor arms all on the same side facing the railroad tracks, top and bottom arms 7' arched, middle 9' arched.

* Rail closest to structures was designated for line crew use, presenting limitations in bucket use. The majority of the work to be performed from the structure.

Sequence of events:

Crew successfully completed a structure in the morning and set up on a second structure at approximately midday. JL #1 ascended the structure to the static position and after inspection noticed broken strands mid span from his position. After communicating this information to the foreman, two JLs were sent mid span with a hi rail bucket to repair the static using an in line pre from splice.

During this process JL #2 and JL #3 ascended the structure to begin work on changing the insulators on the top conductor arm. Tested "Amsteel" rope, in conjunction with a conductor's lip and a small "Skookum" rigged to the top arm, was utilized to lift the top conductor. After the weight of the conductor was relieved from the string of 7 glass disc type insulators, the conductor was unpinned using hot-sticks from the structure. Once disconnected, the crew lowered the conductor. Its exact location in relation to the structure is unknown.

At this point, the crew installed a hook ladder on the top conductor's arm using a tested hand line. JL #2 then positioned himself on the hook ladder with his feet positioned on the

second rung from the top; his work positioning device wrapped twice around the conductor arm and his lanyard attached to the structure. JL# 2 had maneuvered himself to this position to facilitate the rigging and removal of the existing insulators as well as the installation of the new insulators.

At some point in this process JL #2 lost his footing and fell towards the energized phase suspended below him. Some part of JL #2 or his tooling either made contact or got close enough to cause a phase to ground fault causing the circuit to open under a DNR from the utility.

Rescue:

Immediately after the accident, JL #2 remained suspended by his work positioning device attached to the top conductor's arm with severe burns. JL #1 and JL #3 immediately began to initiate a pole-top rescue utilizing the hand line rigged at their work location. The foreman called 911, the bucket crew working on the static began to break down from their location and moved to assist in the rescue. The injured JL was successfully lowered to the ground safely using traditional pole-top rescue methods. Utility substation workers who witnessed the accident immediately rushed to the scene to provide assistance. Also, a nurse who happened to be in an adjacent parking lot with her family witnessed the accident and without hesitation climbed a razor wire protected fence and provided her trained medical support to the injured JL.

EMS arrived and transported him to the hospital immediately.

JLs current status:

He has been transferred out of the ICU after having multiple skin grafts and has been released home. I believe it goes without saying how incredibly lucky this individual is that his injuries are not much worse or a potential fatality.

Contributing factors:

* Minimum approach not maintained and allowable fall distance not taken into consideration.

* Procedure did not allow for necessary clearance to be maintained or created for the working position of injured JL.

Lessons learned:

* Approved rated hot sticks should have been utilized to push displaced phase away from the structure.

* Calculated fall distance within your fall protection/restraint system needs to be accounted for in your procedures.

* Railroad ROWs present unique hazards; access points become limited and closest physical address to your work location for EMS differs from crew's access point. Also, generally speaking, you will be fenced into your work location without gated access points. The rescue was not hindered by these issues, but it became clear that they could have been.

* The crew did have burn blanket/kits as well as the supporting substation workers who responded. After speaking to these individuals' comments were made saying after opening the first one by hand the gel gets on your hands making it nearly impossible to open subsequent kits by hand and that it required scissors. Also, the crew used almost all of these blankets from both crews.

Do you include scissors in your burn kits? And do you have adequate kits available and accessible for your crews?