

Par Electric Fatal Accident

On Wednesday, September 2, 2020 a fatal accident occurred involving a Par Electric four-man crew working at: 315 Stampede Pass in Cle Elum, WA on the Olympia to Grand Coulee BPA 230 KV Line, at structure 86/6. The Scope of work was to change out bells, armor rod, and hardware on lattice towers in a high induction hot corridor.

The day of the accident the crew involved had two journeyman lineman (one being the foreman) and two apprentice lineman, one 2nd step and one 5th step. All four crew members were on the tower at the time of the accident with no one on the ground to assist. They were using fiberglass hook ladders to change out bells, hardware, and armor rod with assistance from a helicopter, when needed. They had completed work on the outside phase (north side of tower) and had used the helicopter to bounce ladders on the tower to the center phase. They tied their shotgun off to the ladder as well as a hoist, and other rigging needed for performing their work. This included a three-ton chain hoist, ground for grounding the phase they were working on, material bags, etc.

Each lineman was using a ladder and had an apprentice working with him. The foreman stated he had the cold apprentice and the lineman was teamed up with a hot apprentice. The foreman was changing out the downhill side bells (18 bells per string) and the lineman was working on uphill side bells (15 per string). The crew was starting to get ready to ground the center phase and begin their work. They were on the bridge of the tower moving into place to get on the ladders and begin grounding the center phase. They stated that each ladder had its own ground that would be installed. The lineman working with hot apprentice had his back to the apprentice and stated he heard him say, "get it off me." He thought he had stepped on the apprentice's hand when trying to climb down the ladder and began to lift his leg at which point he felt a tug on his pants. He looked down and saw that the hot apprentice was slumped into his harness at which point he knew something was wrong.

The crew said they looked around to see if anything was touching the un-grounded phase or if they could see any other hazard. The foreman stated he then told the

could apprentice to grab the shot gun and install the ground to the center phase so they could access the apprentice, who at this point was unresponsive. The ground clamp was too small to fit over the armor rod. The apprentice was then instructed to hold the clamp against the conductor and not remove it. The foreman radioed the helicopter to request assistance in a rescue from the tower of an injured worker. The rescue procedure had been reviewed in the pre-job meeting.

The foreman and lineman got to the hot apprentice and began to start the rescue. The helicopter arrived at the tower with a grapple hook on line. They stated that half of the apprentice's body was still inside the box of the tower bridge and they couldn't get him hooked up to a long-line, at which point they radioed to the pilot and stated they needed a bridle to snap to him to begin moving him out of the tower. The pilot cleared the tower, radioed the LZ (landing zone) that they were inbound and would need to change out the grapple hook for a bridle (snap line) at which point they returned to the tower and continued to rescue the apprentice. Once they were able to clear him from the tower, they returned to the LZ where help was waiting. They got out an AED and began to assess. The AED operated three times but they were not able to get a pulse. It took 10 to 15 minutes to get the injured apprentice off the tower to the LZ. Paramedics arrived and determined the apprentice did not survive his injuries.

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Crew Interviews:

During crew interviews, the crew members said that the chain hoists were secured to the top of ladders and tied off with rope sling at the top, but bottom of hoist was not secured. It was just hanging free with the handle at bottom of ladder, approximately same level as conductor. When asked if the hoist had gotten into the phase at any time they said they never saw it touch the conductor, but did say that the handle had shifted, and was not in front of the ladder as it was when they started moving it. They said it had shifted and was near conductor.

On the day of the interviews, myself, JATC Representative., IBEW 77 Representative, company representatives and the state Labor and Industries High Voltage Compliance Officer visited the accident site. While at the accident site, I was able to get pictures of the crew's rigging and ladders. The ladders were approximately one to two feet from insulators and phase. I saw that the hoist was hanging from the ladder, as they had stated during interviews. It was hanging between the conductor and ladder with nothing in between. Hoist handle was at the same level as the conductor when hanging from the ladder.

During interviews the crew was asked about a grounding plan. They said that when the job had started, they were using master grounds, but at some point, there began to be step/touch potential issues which caused them to come up with a different ground scheme. It was decided that the crews would cut jumpers in the line to isolate from the sub and shorten distance of line (the section of line the work was being performed on was the Olympia to Grand Coulee 230 KV line and is approximately 180 miles between their original opens). Once this was completed, they began working again using single point, EPZ grounding at each tower/work site. When asked if the three crews were communicating when grounding at their work sites, the foreman said they were not.

During interviews, I asked the crew if they had rescue blocks set up on the tower. They said because there was no ground help and all crew members were on the tower performing work, they did not. They stated that their rescue plan was to use the helicopter to perform rescue, if needed.

Investigation Findings:

After doing crew interviews and visiting the accident site, it is believed that the apprentice got into series with an un-grounded conductor (center phase). I believe that the apprentice was moving from the tower onto the ladder to begin work and that his movements caused the ladder to shift and caused the hoist handle to come in contact with the un-grounded conductor. Because the hoist was hanging from the top of the ladder near him, I believe it became energized and he was contacting the hoist near the top of the ladder and was energized by induction.

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Recommendations:

- 1) Comply with Minimum Approach Distance (M.A.D) requirements.
- 2) All crew members should not have been on the tower with no ground help.
- 3) Ground help to operate rescue blocks would have made getting the victim off of the tower much quicker, allowing AED to be operated in a more timely fashion.
- 4) Until conductor is grounded and made safe the cold apprentice should not be on tower because he is not qualified to do energized work, or ground conductors.
- 5) Rigging hoist, tools etc., should not have been hung from the ladder, without securing to ensure that they could not contact conductor prior to grounding.
- 6) Before any work began such as moving ladders etc., line should have been tested and grounds installed to make work area safe.
- 7) Crews should have been communicating when installing and removing grounds. When grounding at multiple sites and not being on same phase this could potentially cause or add to circulating currents and create unseen hazards.

Report Submitted by

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