Check For The “Absence of Voltage”

Every time I teach a 29 CFR 1910.269 class, I constantly remind students in the electrical utility industry to “check for the presence of voltage” after every switching operation when obtaining a “Clearance” before and after grounding and isolation. The failure to identify and isolate hazardous energy has claimed many lives and caused serious injury to employees working in the electrical utility business. Paragraph “M” of the 269 Standard referring to “de energizing for the protection of the employee” is a little different than the 1910.147 The Control of Hazardous Injury because 1910.147(a)(1)(ii)(B) states the 269 employees are not covered by the 147 standard. Paragraph “M” requires “one employee in the crew shall be designated as being in charge of the clearance”. This is not always adhered to and therefore can and does cause problems.

I can think of two instances in my career that are permanently embedded in my mind and I use as examples when providing training 29 CFR 1910.269 paragraph “M” and “N” for obtaining clearances and grounding. Most employees automatically think “primary voltages” when a clearance is obtained. Secondary voltages can cause fatalities and sometimes are taken lightly just because they are “secondary” voltages. I want to share the two examples, one a “close call” and one fatality. The presence of voltage was checked and confirmed in one and not in the other. On the last a 120 volt secondary street light circuit resulted in a fatality.

In the first example I was directly involved. I was a Lead Lineman on an underground crew in 1978. The job that morning was a fairly routine job of isolating and repairing a 4/0 service to a residence in a new subdivision. The trouble man had been to residence and found there was one leg of the UD triplex service “dead”. Upon arrival my crew found the house address, checked voltage at meter base and confirmed the “dead leg” at the house. We left the meter pulled and on ground at house. The tag in the meter base indicated what transformer the service was feeding from. We walked directly across the street to the pad mount transformer, de-energized the transformer, applied proper protective cover up to bushings and elbows, We then checked for absence of voltage on low side spades and grounded the low side spades to allow isolation and identification of proper service at transformer. All 8 services in transformer were correctly tagged with the house addresses. 4 of the 8 services traveled across the street in a duct line and the other 4 services fed the houses on same side of street. We isolated the service in question by removing the service hot legs from spades. The procedure required to check service at house for absence of voltage, ground service at house, and then remove grounds and attach phone by a set of alligator clips. At this point we took a set of phones and attempted to talk the service out from house to transformer. Upon connecting the phones at the house and transformer, we confirmed which hot leg was in trouble. At that point, we all walked back across the street and removed the grounds from transformer spades and energized transformer. The one service that had been identified with a damaged hot leg was isolated and in clear at transformer. The secondary spades, elbows and bushings were covered with protective cover equipment and we were ready to attach a Hypotronics “thumper” to service leg and locate the fault. We didn’t have radar back then and a Dynatel 573 P was the only alternative we had in the locating fault. One of the crew members walked back across street to remove service legs from meter base. I instructed the crew member to check the service again for voltage before removing from service conductors from lugs at meter base even though the legs were identified, isolated and had been grounded at least once. When voltage check was made, it indicated 120 volts on one hot leg. A little confusing at first because we knew the service was correctly isolated at transformer, but upon further investigation, we discovered that the gas company had used a boring machine to go under a driveway near transformer and had damaged all four services going across the street at a duct line crossing. Only one service leg had burn completely apart causing the initial trouble call, but all 8 hot legs were damaged. The damaged conductors were close enough for a “short circuit” to occur in the

ditch. This energized the isolated service we were working on. Had we not checked the meter base the second time before removing conductors, we could have had a flash or contact that may have resulted in serious injury or a fatality.
I always teach that a marking tagged indicated the Sharpie marking pencil was working that day. Also, each end of cable needs to be tested for absence of voltage before and after a clearance is obtained and grounds are applied.

I was the senior employee and in charge of the work. I was responsible for establishing the clearance per 269 paragraph "M" and my company rules. First employees must be responsible for following the rule. In the industry today, we have Job Briefings that should identify the possibility of such hazards. The taking of additional steps to assure the voltage is absent is well worth the time. The OSHA Standard tells us "why" employees should follow rules, but the standard does not tell the utility industry "how" to accomplish the task. The best and safest work procedure must be determined by the utility employees. Utility companies must identify and train to what is believed to the safest work practice that meets and exceeds the minimum the standard requires.

Next issue I will give the details on how the failure to follow those simple rules resulted in the death of a 35+ year employee on a 120 volt street light circuit. A failure to utilize PPE contributed, but the Root Cause of the fatality was that employees on that job site failed to establish a proper clearance and check for the absence of voltage on "all" conductors in the work area.