Lesson Learned 008

Contacted 277 Volt Wire

Early in their shift a Journeyperson and Apprentice electrician responded to a report of lights not working in a facility. After troubleshooting the issue, the two electricians determined the lights were not functioning due to a faulty power pack which supplied power to an occupancy sensor. Using a six-foot step ladder the Apprentice located the power pack above the ceiling grid, and then descended the ladder. Without de-energizing the power pack’s 277 volt circuit the Journeyman climbed the ladder, and began to un-install the existing power pack. After a few short steps the existing power pack was removed, and the Journeyman began to install the new power pack.

The power pack was mounted to the junction box and ready to be wired, when suddenly the employee felt a sharp pain in their ankle. The ankle pain caused the electrician to lose his balance, so he quickly reached for something sturdy in the ceiling. The Journeyperson’s left hand grabbed the ceiling grid and the right hand grabbed the junction box where his thumb contacted the energized 277 volt wire. As a result of contacting the 277 volt wire and the ceiling grid the employee suffered an electrical shock through his upper body and extremities causing an entry burn on his right hand and an exit burn on his left hand. In the course of losing his balance, holding onto the objects in the ceiling, and contacting the energized wire; the ladder then tipped over on to its side and the employee fell approximately four-feet onto the end of the ladder damaging it beyond repair. After the incident the two electricians regained their composure, de-energized the circuit utilizing proper LTV procedures, completed the remainder of the repair, and continued on with their workday. The next day the Journeyperson came to work and immediately informed his supervisor of the potentially life-threatening experience he had faced the day before.

To prevent similar incidents in the future, employees should always:

- Apply the concepts, operating procedures, and program requirements learned in health and safety training to each work task. If field application is unclear, stop and contact your supervisor for guidance.

Voltages greater than 50 have the potential to interrupt the proper function of the heart and may result in death.
• Perform Lock, Tag, Verify to protect against hazardous energy sources (chemical, electric, gravity, hydraulic, mechanical, pneumatic, pressure differential, steam, stored-energy, thermal) prior to servicing, or repairing any equipment, machine, or utilities.
  o If the system must be re-energized for troubleshooting purposes, [HS2F_003_Troubleshooting Procedures] form must be completed and followed.
  o **Energized electrical work is the LAST RESORT**, and is only permitted if;
    - *De-energizing introduces additional hazards or increased risk, e.g. interruption of life support equipment, deactivation of emergency alarm systems, shutdown of hazardous location ventilation equipment, OR*
    - *The task to be performed is infeasible in a de-energized state due to equipment design or operational limitations, e.g. Diagnostics and testing (for example, start-up or troubleshooting) of electric circuits that can only be performed with the circuit energized and work on circuits that form an integral part of a continuous process that would otherwise need to be completely shut down in order to permit work on one circuit or piece of equipment, AND*
    - An Energized Electrical Work Permit is completed, and approved by designated personnel.
  o **Electrical Safe Work Practices**, and **Lock, Tag, Verify** procedures and requirements are not flexible, and do not vary based on the duration of your task or exposure time to a hazard.
• Be a leader. You have a right and responsibility to speak up if you observe at-risk behavior or conditions. Your professional experience, and title at the University have no bearing on this right and responsibility.
• Report all injuries, illnesses, and potential exposures to your supervisor immediately, and through the [Injury, Illness, and Exposure Reporting system] within 24 hours of incident.