The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces through safety and health research

Electrician Electrocuted in Tennessee

FACE 87-69

Introduction:

The National Institute for Occupational Safety and Health (NIOSH) Division of Safety Research (DSR) is currently conducting the Fatal Accident Circumstances and Epidemiology (FACE) Project, which is focusing primarily upon selected electrical-related and confined space-related fatalities. The purpose of the FACE program is to identify and rank factors that influence the risk of fatal injuries for selected employees.

On August 20, 1987, an electrician was electrocuted while troubleshooting a 480 volt DC generator which supplied power to a glue machine.

Contacts/Activities:

Officials of the Occupational Safety and Health Administration (OSHA) for the State of Tennessee notified the National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research (DSR) concerning the fatality and requested technical assistance. This case has been included in the FACE Project. On September 25, 1987, a member of the DSR research team met with the company owner, interviewed co-workers, and discussed the case with a representative from Tennessee OSHA. The accident site was visited and photographed.

Overview of Employer's Safety Program:

The victim was an electrician working for a small (5 employees) company which performs industrial electrical wiring and maintenance. The company only employs union electricians, who undergo extensive training prior to reaching the journeyman level. However, the company itself has no ongoing safety program.

Synopsis of Events:

One of the electrical company's clients, a large facility which produces containers for various grocery products, asked that a 480 volt DC generator be relocated. The facility engineer agreed to assist the electrician (victim) who was sent to perform the work. On the day this incident occurred, the temperature in the facility was approximately 100 degrees Fahrenheit and the humidity was high.

After the two men finished moving the DC generator and reconnecting the electrical wiring, the victim turned on the power to the generator and asked the plant engineer to push the “start” button. When the generator failed to start, the victim got his voltmeter and verified that control voltage was reaching the starter. The victim then moved to the rear of the generator with the voltmeter to verify that he had made the electrical connections correctly and to check the two fuses located in the rear of the generator. The victim actually had to reach from the side of the generator, since there was only about two feet of clearance between the back of the generator and the glue machine which it supplied.

The plant engineer smelled something burning and called to the victim, who did not respond. He then looked behind the generator and saw the victim slumped over, one arm on a transformer and his head on the floor. He shouted to other employees (working nearby) to call for an ambulance and to cut the power off at the power disconnect switch. The victim was then pulled from behind the generator and cardiopulmonary resuscitation (CPR) was begun. The emergency medical service (EMS) arrived approximately 15 minutes after the incident and began advanced cardiac life support (ACLS). Resuscitation efforts, which were continued enroute and after arrival at a local hospital, were unsuccessful. The victim was pronounced dead in the hospital emergency room.

Notes:

1. The victim apparently contacted one phase of the 480 volt AC power supply to the generator, which was energized at 270 volts (phase to ground).

2. When the generator was moved, some non-conductive, particulate matter was apparently dislodged, which prevented the switch from completing the control circuit when the “start” button was initially pressed. After several subsequent attempts, the starter worked and has continued to function properly.

Cause of Death:

The medical examiner ruled that death was due to accidental electrocution. No autopsy was performed, but burns were noted on the victim’s left hand.

Recommendations/Discussion

Recommendation #1: Decisions about equipment location should include consideration of maintenance requirements.

Discussion: The location chosen for the generator ensured that maintenance to the generator would be from an awkward position at the side of the generator. This increased the possibility of contacting an energized conductor. It should be noted that the facility is voluntarily having the generators relocated away from the work area and that sufficient room for maintenance is being provided.

Recommendation #2: Employers should develop and implement a comprehensive safety program that addresses both the recognition of workplace hazards and procedures to minimize those hazards.

Discussion: The fact that safety training is an integral part of the training required to become a journeyman electrician is useful and necessary, but not sufficient. This incident occurred at the end of the workday when the victim, who was hot and covered with perspiration (which lowered his electrical resistance), attempted to work in the vicinity of energized equipment in a cramped space. An active company safety program should be developed which stresses hazard recognition and safe work procedures.

Return to In-house FACE reports

Last Reviewed: November 18, 2015