FACE 98IA053

To: Director, National Institute for Occupational Safety and Health

From: Iowa FACE Program

Subject: Electrician falls to his death from an old wooden transformer platform.

Summary
A 47-year-old male city electrical supervisor died from injuries suffered on July 20, 1998 when he fell 25 feet from a wooden utility platform. He was removing transformers from the platform when a plank gave way under him. The platform was built to hold electrical transformers, not electrical workers. It had two cross beams between two poles and planks bolted onto the cross beams. The planks were not adequately supported to hold the weight of a person standing close to the edges, and there were no guardrails. The platform was deteriorated from the weather, and may have also been damaged in a fire that occurred two days before. The platform was fairly wide which made it difficult to gain access to the transformers from an aerial lift bucket.

The electrical supervisor and an assistant arrived at the job site at 7:30 am with a bucket and digger truck. The assistant moved the truck near the transformer platform, and the supervisor went up in the bucket to the platform level. He stepped onto the platform and removed the secondary and ground leads so the three transformers could be removed from the platform. He hooked a sling on the middle transformer and climbed back in the bucket. After lowering and removing the transformer, he went back into the bucket and up to the platform level to remove another transformer. He stepped on the platform again and walked across to remove the end transformer. Suddenly, a plank came loose under him and he fell 25 feet to an alley. The assistant immediately radioed for help. When the crews arrived the electrical supervisor was pronounced dead at the scene from severe head and neck injuries.

RECOMMENDATIONS based on our investigation are as follows:

Employees of electrical workers should establish a training program which includes job specific hazard recognition, fall protection, and safe aerial lift use procedures.

Employers should provide fall protection devices when needed and ensure that they are maintained and used properly.

Owners and operators of electrical utility installations should ensure that the installations are maintained in a safe condition.

INTRODUCTION

The Iowa FACE program became aware of the incident from a newspaper article and began an investigation. Information was gathered from police reports, city documents describing the incident, and an interview with city employees during a site visit. Photographs of the site were taken which showed the missing board on the platform, the transformers that were to be removed, and the new transformers sitting on metal framing adjacent to the old wooden platform.

The city had approximately 2,300 people and employed 26 full-time workers. The city government had a limited safety program, but no safety manager. The safety committee worked through the workers' compensation office, had monthly meetings, and videos for most training situations.

The electrical supervisor had worked for the city for 11 years, and was a member of AFSCME, Council 61. He was in the process of becoming certified, and had completed one year of a 4-year apprenticeship program through the *Iowa Association of Municipal Utilities* (IAMU).

Three transformers were scheduled to be removed on Wednesday, July 22, 1998. On Saturday, July 18th, a transformer fire occurred which was assumed to be caused by overload. The fire was extinguished and new transformers were connected. On the following Monday morning, July 20, 1998 two city employees arrived on site to remove the old transformers. They were on site for about 15 minutes before the injury occurred. The weather was clear and sunny.

INVESTIGATION

The on-site investigation was conducted on August 4, 1998. The three transformers that were scheduled to be replaced, were situated on a wooden platform about 25 feet above ground level. The platform was made of eight 2" X 12" wooden planks, each about six feet long, bolted onto two 3" x 12" cross beams between two poles. The cross beams were about a foot apart, fastened to the sides of the poles. The distance between the poles was 10 feet. The platform was built to hold the transformers in line at the center on top of the cross beams. A new metal transformer platform had been installed next to the old one. Newer transformer platforms are usually constructed of steel, and some have guard rails installed.

The platform was not designed as a safe working platform. The planks did not have cross members or bracing near the edges and therefore did not provide adequate support for the weight of the worker. Furthermore, there was no guardrails to protect the worker from falling (see photo). The wood platform may have had some damage from the fire two days earlier, although this could not be clearly observed. The boards still in place appeared quite rotten and did not look capable of supporting human weight. Based on observation from ground level, the platform did not meet the requirements of a safe working platform.

The electrical supervisor and an assistant arrived at the job site at 7:30 am with a bucket and digger truck. The assistant moved the truck near the transformer platform, and the victim went up in the bucket to the platform level, approximately 25 feet from the ground. The assistant remained in the digger truck operating the boom to lower the transformers to the ground. The men were in the process of removing the second transformer when the victim walked across the platform to remove another transformer. A single plank came loose and the victim fell 25 feet to an alleyway, landing on his head. The assistant immediately radioed for help, and when crews arrived, they noticed the severe head and neck injuries, and the supervisor was pronounced dead at the scene of the accident.

The procedure of removing and connecting transformers was semi-routine for these men. A city employee stated that although some transformer stations have platforms, they usually work out of the bucket when performing this type of work. The victim had not received training in fall protection, and whether working from inside or outside the bucket, did not wear any fall protective equipment.

CAUSE OF DEATH

The official cause of death from the medical examiner's report was, "severe head and neck trauma".

RECOMMENDATIONS / DISCUSSION

Recommendation 1: *Employees of electrical workers should establish a training program which includes job specific hazard recognition, fall protection, and safe aerial lift use procedures.*

Discussion: An initial assessment of the job-at-hand should include identification of the hazards involved. The platform in this case showed signs of hazardous working conditions, even from a visual inspection from ground level. The absence of cross members, braces, and guardrails, as well as the deterioration of the wood planks, were evident signs of hazardous conditions. Fall protection precautions should be considered before entering such platforms. Electrical workers should be trained in safety precautions specific for aerial lifts and accessing elevated electrical installation. This training should emphasize that the employee remain in the bucket when it is elevated, and wear fall protection equipment. Only trained persons should operate aerial lift controls or work in the bucket. This work situation was likely complicated by the width of the platform, which may have prevented access to the transformers from the aerial bucket. If no other safe method was available, the planks could have been cut shorter to gain access from the bucket.

Recommendation 2: *Employers should provide fall protection devices when needed and ensure that they are maintained and used properly.*

Discussion: Electrical workers at risk of fall from work levels four feet or more above the ground or working surface must be protected by some form of fall protection. Paragraph 1910.269 (g)(2) contains fall protection requirements for electric

power generation, transmission, and distribution in the electric utility industry. Even when working from the bucket of an aerial lift, workers are required to wear a body belt and lanyard attached to the boom or basket [29 CFR 1910.67(c)(2)(v)].

Recommendation 3: *Owners and operators of electrical utility installations should ensure that the installations are maintained in a safe condition.*

Discussion: The transformer platform was not well designed for safe maintenance work. It was too wide to enable accessing the transformers from a bucket, yet it was not built for safe access while standing on the platform. There was no cross bracing to provide adequate support for a worker and there were no guardrails to provide fall protection. The platform wood planks had clear evidence of deterioration from the weather. The owners of electrical utility installations should replace unsafe work platforms and provide safe working conditions for electrical workers.

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Fatality Assessment and Control Evaluation

FACE

FACE is an occupational fatality investigation and surveillance program of the *National Institute for Occupational Safety and Health* (NIOSH). In the state of Iowa, *The University of Iowa*, in conjunction with the *Iowa Department of Public Health* carries out the FACE program. The NIOSH head office in Morgantown, West Virginia, carries out an intramural FACE program and funds state based programs in Alaska, California, Iowa, Kentucky, Maryland, Massachusetts, Minnesota, Missouri, Nebraska, New Jersey, Ohio, Oklahoma, Texas, Wisconsin, Washington, and Wyoming.

The purpose of FACE is to identify all occupational fatalities in the participating states, conduct in-depth investigations on specific types of fatalities, and make recommendations regarding prevention. NIOSH collects this information nationally and publishes reports and Alerts, which are disseminated widely to the involved industries. NIOSH FACE publications are available from the NIOSH Distribution Center (1-800-35NIOSH).

Iowa FACE publishes case reports, one page Warnings, and articles in trade journals. Most of this information is posted on our web site listed below. Copies of the reports and Warnings are available by contacting our offices in Iowa City, IA.

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