The National Institute for Occupational Safety and Health (NIOSH)

Pipe Fitter Falls 42 Feet to His Death in New Jersey

New Jersey Case Report: 90NJ005 (formerly NJ9003)

SUMMARY

On May 1, 1990, a 41-year-old male pipe fitter was killed as a result of a 42 foot fall through a floor opening. The victim was a pipe fitter who had been hired through a union hall by a large construction company; just 2½ days prior to the fatality. The company had been doing heavy construction in a building at the site of a power generating station. The worker was using no fall protection and fell 42 feet to a net. The net was not provided as fall protection but was a "garbage" net used to catch any dropped tools or equipment and protect anyone walking on the 1st floor. FACE investigators concluded that, in order to prevent similar occurrences in the future, employers and employees should:

- provide and use fall protection whenever the potential for a serious fall exists;
- provide training to all employees that emphasizes safety rules and procedures including the use of fall protection;
- prominently post warning signs whenever a guard rail is removed from a floor opening;
- practice good housekeeping.

INTRODUCTION

On May 2, 1990, the fatality was reported by the county medical examiner to the New Jersey Department of Health FACE team. OSHA conducted an inspection on the day of the fatality. A FACE investigation was conducted with OSHA on May 3, 1990. Photographs were taken on-site. Information about the co-workers' statements concerning circumstances of the fatality was derived from the OSHA file. The FACE team held a meeting with the employer's safety officer, power station safety personnel and management, and OSHA.

The employer is a large heavy-construction firm which has been in business for over 100 years. The firm employs more than 1,000 people at sites throughout the United States. The company has a corporate safety director and written safety rules & procedures. On-site project supervisors are responsible for the overall management of construction activities as well as safety at each site. There is no individual who has the sole function of safety management on a work site. According to a co-worker, new workers were given written literature about the company's safety standards; the workers must sign to indicate the literature was received.

INVESTIGATION

The building-in-which the victim was working is built of concrete floors with a "hatchway" cut out of the second, third, fourth and fifth floors. The floor opening allows large pieces of bulky equipment to be hauled from floor to floor; its perimeter is usually protected by a railing and a toeboard. Dimensions of the floor opening are not identical on each floor.

The opening at the fifth floor measures 15 feet 2 inches by 12 feet 3 inches. The fourth floor opening measures 11 feet 2 inches by 12 feet 3 inches. A net is attached at the second floor level, not for fall protection, but to protect anyone walking underneath from falling equipment or debris.

On the day of the fatality a large piece of equipment, which was a modification to a non-functioning fuel handling device, was brought up to the fifth floor by the laborers and iron workers using an air tugger and chain. In order to bring the device out of the hatchway onto the floor, the railing was removed on one entire side and 6 feet of an adjacent side. Because a one-inch pipe was in the way and prevented movement of the equipment to its permanent position, the pipe fitters were summoned to cut it away. The pipe fitter crew was composed of the victim, his co-worker and a foreman all of whom had been hired 2½ days earlier to replace a foreman, who had been dismissed, and two workers who left the job.

To use the ten pound portaband saw to cut the one-inch pipe a worker dropped an extension cord down to the fourth floor to be plugged in. The pipe was cut (at a location several feet from the floor opening). After the job was finished, the victim was pulling the extension cord up through the hatchway, first standing behind the railing, and then near the unguarded opening. One co-worker stated that the victim tripped but a second co-worker was not sure. They agree that he did not walk into the hole. The workers reported that many pieces of equipment were on the floor. If the victim tripped, it may have been on the equipment or on the four-inch toe board.

The victim fell 42 feet, landing prone in the second floor net, which held him. Witnesses reported that the victim hit structures at the perimeter of the floor opening of two of the lower floors on his way down.

He made no contact with the first floor at any time. Emergency services were summoned; he was extricated and pronounced dead in the rescue squad via telemetry.

CAUSE OF DEATH

The medical examiner listed the cause of death as multiple injuries of the trunk. He also was found to have a fractured skull.

RECOMMENDATIONS/DISCUSSIONS

Recommendation #1: Whenever any work is performed from an elevation where the potential for a serious fall exists, fall protection must be provided and utilized.

Discussion: Since it was necessary to remove the guard rails to bring in large equipment, a fall hazard existed. Although this worker's usual tasks did not require fall protection, once he was near the unguarded floor opening he required equipment to prevent a fall. He and all workers in that area should have been wearing a safety belt or harness with a lanyard and have been tied off. The construction company's safety manual states the need to use fall protection when there is the possibility of a fall of ten feet or more. These written safety rules must be enforced by the employer and the person responsible for safety at the project site.

If employees routinely are found to use no fall protection devices, the power plant station management should consider installing permanent attachments at each floor opening for safety nets. A net should be attached whenever a railing has been removed and the floor opening is free of equipment.

Recommendation #2: The employer should train employees in the recognition of hazards and the methods to control such hazards.

Discussion: Employees must be educated to be able to recognize safety hazards and to use appropriate safety equipment. When employees are new, time should be spent to stress the employer's concerns with safety issues. It is necessary also to stress this to long-term employees. At each site the employer should have one person whose sole responsibility is worker safety. To emphasize the employer's concern, it may be necessary to penalize employees who do not conform to safety standards.

Recommendations #3: When a fall hazard has been created, especially where none previously existed, warning signs should be prominently displayed.

Discussion: Very clearly marked, visibly noticeable floor signs should be in placed to announce the hazardous conditions which exist. Positioning of the signs can be done in such a manner that they will not interfere with work procedures, such as placing them at the periphery of the work area. They will, however, alert workers to the dangers of falling through a newly created floor opening.

Recommendation #4: Floors and work areas should be kept clear of equipment and debris.

Discussion: It is not clear how cluttered the fifth floor work area had been at the time of the fatal fall. OSHA saw no violation at the time of inspection on the day of incident. Good housekeeping practices contribute to workplace safety.

REFERENCES

1. 29 CFR 1926.104 Code of Federal Regulations. Washington, D.C.: U.S. Government Printing Office, Office of the Federal Register.
2. Accident Prevention Manual for Industrial Operations, Administration and Programs, "Personal Protective Equipment", Volume 1, Ninth Edition, National Safety Council, 1988.

FATAL ACCIDENT CIRCUMSTANCES AND EPIDEMIOLOGY (FACE) PROJECT

Staff members of the FACE project of the New Jersey Department of Health, Occupational Health Service, perform FACE investigations when there is a work-related fatal fall or electrocution reported. The goal of these investigations is to prevent fatal work injuries in the future by studying: the working environment, the worker, the task the worker was performing, the tools the worker was using, the energy exchange resulting in fatal injury, and the role of management in controlling how these factors interact.

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