TO: Director, National Institute for Occupational Safety and Health

FROM: California Fatality Assessment and Control Evaluation (FACE) Program

SUBJECT: Maintenance Mechanic Died after Falling Approximately 30 Feet from an Elevated Forklift Platform in California

SUMMARY

California FACE Report #95CA001
August 20, 1996

A 44-year-old, male maintenance mechanic (the victim) died after falling approximately 30 feet from an elevated platform (crow's nest) that was being lifted by a forklift. The crow's nest was 48" x 26", was equipped with a 36" protective rail, and was attached to the top of a 15' pole**.** The victim had requested that a coworker, who had not been trained in forklift operations, lift him so that the victim could inspect a lighting fixture. The coworker stated that when the victim finished his observation, he (the coworker) began to lower the forks. However, the fork carriage traveled up out of the inner rails, allowing the carriage to tilt forward at a 45 degree angle. Neither the victim nor the crow's nest were secured or tied off. The victim fell 30 feet to a table below, and the crow's nest fell on top of him. Coworkers summoned paramedics to the scene and the victim was taken to the hospital where he died approximately two weeks later. Examination of the forklift after the incident revealed that both stops that prevent the carriage from traveling up out of the inner rail were missing. One stop broke at the time of the incident; the other had been missing from the forklift for at least one year. No evaluation of the controls was performed after the incident so it is unknown if they were functioning properly. The victim had been employed with this company for three months. The employer had no provision within their Injury and Illness Prevention Program (IIPP) to ensure safe work practices. The CA/FACE investigator concluded that in order to prevent similar future occurrences, employers should:

- have machinery and equipment such as forklifts inspected and serviced on a regular basis.
- ensure safe work practices among employees by use of recognition, training, or discipline.
- have a standard operating procedure (SOP) for the proper use of a crow's nest.
- require that employees be adequately guarded or restrained when being elevated by a forklift.

INTRODUCTION

On February 11, 1995, a 44-year-old maintenance mechanic (the victim) died from injuries he sustained on January 29, 1995, when he fell from an elevated forklift platform (crow's

nest) which then fell on him. The CA/FACE investigator was informed of this incident on March 2, 1995 by a California Division of Occupational Safety & Health (Cal/OSHA) district office. A site visit was conducted by the CA/FACE investigator on June 9, 1995 with the employer and the victim's supervisor. A delay in the investigation occurred since the CA/FACE investigator had been denied entry to the site prior to that date. Photographs of the incident site and the machinery involved were taken. A copy of the Cal/OSHA Report and the Coroner's Autopsy Report were obtained by the CA/FACE investigator.

The employer in this incident operated a machine shop where the primary type of work performed was metal grinding. The company had been in business for 48 years and had been located at this site for approximately 25 years. There were 45 workers employed with the firm and three employees had the same job title as the victim. The victim had worked for his employer for approximately three months. The employer stated that they had a safety officer on staff who devoted approximately 25% of his time to safety issues. He also stated that there was a safety program in place but that there was no written safety training documentation for the task the victim had been performing.

INVESTIGATION

At approximately 10:49 a.m. on the day of the incident, the victim had just completed a task assigned to him by his supervisor. He was a new employee having been hired only three months earlier, and was recognized as an enthusiastic worker, eager to do his job well. The victim's supervisor stated that he told the victim he then intended to raise the victim using a forklift and an attached crow's nest in order to observe a lighting fixture. The employer stated that this method of observation was unusual, and that normally a movable catwalk would have been used. The supervisor stated that, just prior to lifting the victim, he had been called to the office.

In the absence of his supervisor, the victim asked a coworker to operate the forklift and raise him using the crow's nest. The crow's nest is a 48" wide x 26" long platform that is attached to the top of a 15 foot pole. Angle iron that act as rungs are welded to the pole allowing workers to climb up to the platform. The crow's nest was equipped with a 36" high protective rail. The forks of a forklift fit into the base of the crow's nest so that it can be lifted. (see Exhibit 1). The coworker had not trained in forklift operations. However, he complied with the victim's request and followed his instructions while raising him in the crow's nest. The coworker stated that he raised the forks to their highest extension so that the victim could observe the lighting fixture. The victim then instructed the coworker to lower him back down.

The coworker stated that he then began to slowly lower the forks. However, examination of the forklift after the incident showed that the fork carriage had traveled up and out of the inner rails. This allowed the fork carriage to tilt forward at a 45 degree angle. The coworker stated that he heard a loud noise and saw the victim fall from the crow's nest. The victim caught hold of the nest for a few moments, then fell feet first to a mill table approximately 30 feet below. When the victim landed he fell over striking his head. The crow's nest fell immediately after the victim. The lower end of the crow's nest, the end closest to the forklift, struck the ground first. The crow's nest then tipped over and the upper section of the nest struck the victim where he lay. Coworkers immediately summoned emergency services to the scene. Paramedics determined that the victim had strong vital signs and that he complained of pain along his entire back. The paramedics provided oxygen to the victim and effected spinal immobilization prior to

transporting him to the hospital. The victim sustained multiple blunt force injuries; bilateral rib fractures, fractures of the coccyx and left hip region, contusion of the left lung, and acute hemorrhagic pancreatitis. The victim's condition continually deteriorated until he died on February 11, 1995, at 1:05 p.m.

Examination of the forklift crossbar after the incident indicated that both stops that would have normally prevented the inner carriage from traveling up and out of the inner rails were missing. One of the stop sites was rusted along the edge of the weld area, and a stop, with broken welds that matched the welds at the stop site, was found in the area. The site of the other stop had been painted a year previously. The forklift was removed from service following the incident, and no evaluation was made to determine if the controls were functioning properly. No documentation of forklift safety inspections had been made by the employer.

The crow's nest used in this operation had been designed by the employer. Although the pole of the nest was equipped with a safety chain to prevent it from tipping away from the forklift, it had not been attached.

The company's Injury and Illness Prevention Program was deficient in two areas. There was no provision for insuring safe work practices among employees through either recognition or discipline, and there was no documentation of training of employees in the operation of forklifts.

CAUSE OF DEATH

The Coroner's Autopsy Report stated the cause of death to be traumatic acute pancreatitis.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should have machinery and equipment such as forklifts, inspected and serviced on a regular basis.

Discussion: In this incident, one forklift stop had apparently been missing for a year, since the attachment site had been painted at least that long ago. The other stop probably failed due to weakening of the weld from rust or cracks. It is unknown if the controls were working properly. The employer did not have a system for periodic inspections nor was there any documentation of inspections. Comprehensive, periodic inspections of the forklift would have identified the above problems and prompt servicing would have corrected them. If both stops had been present and in good working condition, the fork carriage would probably not have been able to run out of the inner rails.

Recommendation #2: Employers should ensure safe work practices among employees by use of recognition, training, or discipline.

Discussion: In this incident, two inexperienced workers performed a task for which they did not have the proper knowledge or training. The victim was a new employee and his coworker operated the forklift even though he had not been trained in its use. The incident occurred when the fork carriage traveled up rather than down. The carriage traveled upward either due to control malfunction or operator error. Trained forklift operators are less likely than untrained operators to make errors in operation, and they would more quickly recognize and react to control malfunctions. If a trained operator had been operating the forklift, this incident may have been avoided.

In addition, the victim was eager to do his job well. He may have thought that his actions

would have been helpful to his supervisor who had been called away from the site. If the company had had a well-established program for rewarding workers who followed safe work practices and disciplining those that did not, and had this been emphasized during initial orientation and ongoing safety meetings, then both the victim and his coworker may have been more reluctant to perform the operation in the manner in which they did.

Under Title 8 of the California Code of Regulations, Section 3203 (a)(2), an employer's IIPP should: "Include a system for ensuring that employees comply with safe and healthy work practices. Substantial compliance with this provision includes recognition of employees who follow safe and healthful work practices, training and retraining programs, disciplinary actions, or any other such means that ensures employee compliance with safe and healthful work practices."

Recommendation #3: Employers should have a standard operating procedure (SOP) for the safe use of crow's nests.

Discussion: Although a safety chain, designed to secure the crow's nest to the forklift, was present, it had not been attached. A SOP that stressed the importance of using the safety chain on the crow's nest would have increased the likelihood that it would have been used. Although this would not have kept the forks from tipping, it may have decreased the angle that the crow's nest tipped, and it most likely would have prevented it from falling. Under Title 8 of the California Code of Regulations**,** Section 3657 (a): "When it is necessary to elevate employees using an industrial truck,... (2) The platform shall be secured to the forks or mast to prevent tipping, slipping, or falling."

Recommendation #4: Employers should require that employees be adequately guarded or restrained while being elevated by a forklift.

Discussion: The crow's nest had a protective railing measuring only 36" in height. If the victim had been restrained by a higher railing or a lifeline he may have remained inside the crow's nest. Although he may still have fallen with the crow's nest, he may have sustained nonfatal injuries. Under Title 8 of the CCRs, Section 3210 (a): "Guardrails shall be provided on all open sides of unenclosed roof openings, open and glazed sides of landings, balconies or porches, platforms, runways, ramps, or working levels more than 30 inches above the floor, ground or other working areas." A standard guardrail is 42 inches high. Standard guardrail systems also include a mid-rail, which was missing from the crow's nest.

References

Barclays Official Code of Regulations, Vol. 9, Title 8, Industrial Relations. South San Francisco, CA, 1990.

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FATALITY ASSESSMENT AND CONTROL EVALUATION PROGRAM

The California Department of Health Services, in cooperation with the Public Health Institute and the National Institute for Occupational Safety and Health (NIOSH), conducts investigations of work-related fatalities. The goal of this program, known as the California Fatality Assessment and Control Evaluation (CA/FACE), is to prevent fatal work injuries in the future. CA/FACE aims to achieve this goal by studying the work 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. NIOSH-funded, state-based FACE programs include: Alaska, California, Iowa, Kentucky, Massachusetts, Michigan, Minnesota, Nebraska, New Jersey, New York, Oklahoma, Oregon, Washington, West Virginia, and Wisconsin.

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Additional information regarding the CA/FACE program is available from:

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