

TO: Director, National Institute for Occupational Safety and Health

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

SUBJECT: Fire Department Paramedic Dies after Falling from Helicopter during a Retrieval Operation in California

SUMMARY

California FACE Report #93CA002

November 15, 1994

A 28-year-old white male fire department paramedic died after falling approximately 50 to 75 feet from a helicopter during an attempt to retrieve medical equipment in a state park.

The victim worked in the air operations division of the county fire department. The victim was using a tether strap harness and carabiners to secure himself to the helicopter. This was a routine operation procedure for personnel in the air operations division. The restraining system failed causing the victim to fall. Upon recovery, there were no emergency medical kits on board to begin first aid. The CA/FACE investigator concluded that, in order to prevent similar future occurrences, employers should:

- have a standard operating procedure (SOP) stating that coworkers double check each other's equipment before attempting rescue operations
- have a standard operating procedure (SOP) stating that a certain number of emergency medical kits and life support equipment items are kept on board all rescue helicopters.

Additionally,

- rescue equipment should be designed so that potential for human error is minimized or eliminated.

INTRODUCTION

On March 30, 1993, a 28-year-old male paramedic died after falling approximately 50 to 75 feet from a helicopter in an attempt to retrieve medical equipment. The incident occurred at 3:50 p.m. The CA/FACE investigator was informed of this incident by a Cal/OSHA safety engineer. A copy of the Cal/OSHA Report, Police Report, and the Coroner's Autopsy Report were obtained by the CA/FACE investigator.

The employer in this incident was the county fire department. The fire department employed 3,500 employees. The victim was a veteran paramedic in the air operations division and had prior experience in retrieval operations. Fire department personnel were allowed to use their own equipment (carabiners and other mountaineering gear) while conducting rescue

operations. The victim was described by his co-workers as being very efficient and reliable.

INVESTIGATION

On the day of the incident, the victim, a coworker, and the pilot rescued a teenager who had sustained a fatal fall while hiking in the state park. After completing this operation, they went back to retrieve medical equipment which had been accidentally dropped at the wrong location. The co-worker (worker who was being sent down to retrieve the equipment) stated that there had been little communication between himself and the victim prior to the retrieval operation. Both the victim and the pilot were wearing headsets but the co-worker was not given a headset nor was there one available in the helicopter. The victim was about to lower his co-worker with a hoist when the incident occurred. The procedure for this exercise demanded that the victim lean out of the helicopter in order to operate the hoist. The victim was using a tether harness and carabiners to secure himself to the helicopter. This was a normal procedure for air operations personnel, and it was one the victim had performed on previous occasions.

The co-worker stated that as he was preparing to be lowered he glanced back and saw the victim falling through the air. The carabiner (a device used to secure the harness lanyard from the victim to the helicopter) was later found in the "open position". It is unknown whether the victim left the carabiner unsecured, or if it had opened due to some movement by the victim. The co-worker pounded his fist on the side of the helicopter to get the pilot's attention. The pilot was unable to hear him, however, because he was wearing a headset. Consequently, it took several minutes before he looked back and realized something was wrong. The co-worker mouthed the words stating that the victim had fallen. The pilot landed the helicopter nearby and a plan was devised to rescue the victim.

The co-worker was lowered to the ground, next to the victim, in an area of high brush canopy and on a very steep and slippery slope. He (co-worker) yelled out the victim's name but received no response. The co-worker then attached his carabiner to the victim's harness so that the pilot could raise them to the helicopter. The co-worker also tried to protect the victim's neck, airway and C-spine. The co-worker signaled the pilot to bring them back up to the helicopter, however when the pilot started to lift them, the co-worker lost his footing and consequently they were pulled up in a horizontal manner. The pilot landed nearby so they (victim and co-worker) could move inside the helicopter.

The co-worker stated that he immediately checked for vital signs after unhooking the victim from his carabiner. He found no response, so he gently opened the victim's airway and began to give him mouth to mouth resuscitation. The pilot grabbed a "flat," they positioned the victim on it and moved him inside the helicopter. There was oxygen in the helicopter but no ambu-bag or resuscitator. This equipment had accompanied the earlier victim to the hospital. The co-worker began and continued Cardiopulmonary Resuscitation (CPR) until they arrived at the emergency room at the hospital. It took approximately four minutes to fly to the hospital from the last landing spot. The victim was taken to the emergency room where he was pronounced dead at 7:13 p.m.

CAUSE OF DEATH

The Coroner's Autopsy Report stated that the cause of death was massive internal bleeding due to transection of the thoracic aorta.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should institute a standard operating procedure (SOP) that co-workers double check each other's equipment before attempting rescue operations.

Discussion: This incident may have been prevented if there had been an SOP requiring that additional checks be made on all equipment before rescue operations are conducted. The risks involved in this type of work are very great and require additional safety precautions in order to minimize human error.

Recommendation #2: Employers should implement a standard operating procedure (SOP) that emergency medical kits and life support equipment items be kept on board all rescue helicopters at all times.

Discussion: The medical equipment on this helicopter had been used in an incident earlier in the day. Prior to leaving the hospital, the helicopter personnel should have obtained a replacement set.

Recommendation #3: Rescue equipment should be designed so that potential for human error is minimized or eliminated.

Discussion: If the victim's carabiner had been designed so that it gave a positive signal when it was secured, or if it could not be left in an unsecured position, this incident may not have occurred. Alternatively, the harness securing the victim could have been designed so that it wouldn't require the extra step of securing it to a lifeline. This also might have prevented this fall.

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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.

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

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