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NIOSH
Fire Fighter Fatality Investigation and Prevention Program

Death in the line of duty...

A Summary of a NIOSH fire fighter fatality investigation *May 16, 2001*

A Volunteer Fire Fighter Died After Being Struck by a Motor Vehicle While Directing Traffic–New York

SUMMARY

On January 9, 2001, a 48-year-old male volunteer fire fighter (the victim) was struck by a motor vehicle while directing traffic. The victim and Fire Fighter #1 had responded in Rescue Truck 66 at 1642 hours to a call for a non-injury, motor-vehicle crash involving downed power lines. Assistant Chief #1 called for fire police to block the southbound lane of traffic coming from the north of the motor-vehicle crash, and for another crew to block the northbound traffic coming from the south of the motor-vehicle crash. At 1654 hours, the victim and Fire Fighter #1 arrived at the intersection north of the motor-vehicle crash and positioned Rescue Truck 66 just south of the intersection with the apparatus facing north. With the emergency lights activated, Fire Fighter #1 and the victim stood near Rescue Truck 66, directing traffic. At approximately 1720 hours, a civilian driver heading west stopped at the intersection and signaled to make a left turn (south). The victim walked over to inform the driver that the road was closed. At 1722 hours, the victim stepped back away from the driver's window when a pickup truck traveling eastbound struck him. The victim was thrown under a pickup truck stopped in the westbound traffic lane. He was transported to a local hospital and later transferred to the regional trauma center. He died the following day at 0323 hours.

NIOSH investigators concluded that, to minimize the risk of similar occurrences, fire departments should

- ***establish, implement, and enforce standard operating procedures (SOPs) regarding emergency operations for highway incidents***
- ***ensure that personnel receive training in the proper procedures and the hazards associated with conducting traffic control***
- ***ensure that personnel wear personal protective clothing that is suitable to that incident while operating at an emergency scene, such as a highly visible reflectorized flagger vest (strong yellow-green or orange)***
- ***establish pre-incident plans regarding traffic control for emergency service incidents***

INTRODUCTION

On January 9, 2001, a 48-year-old male volunteer fire fighter (the victim) was struck by a motor vehicle while directing traffic. The victim was transported to a local hospital where he was stabilized prior to being transported to the regional trauma center for additional medical treatment. The victim died at 0323 hours the following day.

The **Fire Fighter Fatality Investigation and Prevention Program** is conducted by the National Institute for Occupational Safety and Health (NIOSH). The purpose of the program is to determine factors that cause or contribute to fire fighter deaths suffered in the line of duty. Identification of causal and contributing factors enable researchers and safety specialists to develop strategies for preventing future similar incidents. The program does not seek to determine fault or place blame on fire departments or individual fire fighters. To request additional copies of this report (specify the case number shown in the shield above), other fatality investigation reports, or further information, visit the Program Website at

www.cdc.gov/niosh/firehome.html
or call toll free **1-800-35-NIOSH**

A Volunteer Fire Fighter Died After Being Struck by a Motor Vehicle While Directing Traffic– New York

The National Institute for Occupational Safety and Health (NIOSH) was notified of this incident on January 10, 2001, by the United States Fire Administration. On February 12, 2001, a safety and occupational health specialist from NIOSH's Fire Fighter Fatality Investigation and Prevention Program investigated this incident. Meetings were conducted with the Chief of the department, Investigators from the County Sheriff's Department, the county's Director of Emergency Management and Fire/EMS Coordinator, and a safety and health inspector from the State of New York's Department of Labor. Interviews were conducted with the officers and fire fighters involved in this incident. The NIOSH investigator reviewed the Sheriff Department's copies of site maps, drawings, photos, witness statements, dispatch run sheets, and the police accident report. A copy of the fatality inspection report and scene photos were provided by the State of New York's Department of Labor, and were reviewed. A copy of the *Fire Police* workbook was obtained from New York State's Office of Fire Prevention and Control. Copies of the department's standard operating procedures and the victim's training records were reviewed. A site visit was conducted and the incident scene photographed.

The site of the incident is a two-lane state highway at a north-south, east-west intersection. The east-west highway width measured 31 feet 6 inches. Fog-line to fog-line width measured 21 feet 1 inch. The north-south traffic lanes have two overhead flashing red signal lights with stop signs posted at each of the two corners on the roadway. The east-west traffic lanes have two overhead flashing yellow signal lights (see Photo). The incident site has a posted speed limit of 55 mph. At the time of the incident, the weather was reported as having light snow fall with high winds causing limited visibility. The road was covered with a loose wet snow with ice under the snow. Traffic at the intersection was reported as being unusually high at the time of the incident due to a sporting event being held at the elementary school (see Diagram 1).

The fire department involved in this incident consists of 1 station with a total of 84 uniformed fire fighters. The department serves a population of 2,800 in a geographic area of 33 square miles. The department requires all new fire fighters to complete 42 hours of training in basic fire fighting. The victim had not received fire police or traffic control training. *Note: Fire police in the State of New York are designated as peace officers and are authorized (while on duty) to conduct traffic control. Fire police are classified as fire fighters whose specific assignment is to the fire police squad.* The victim was certified in the State of New York as Fire Fighter Basic and had six months of volunteer fire fighting experience.

INVESTIGATION

On January 9, 2001, at 1642 hours, a call came in from Central Dispatch reporting a motor-vehicle crash with downed power lines. Assistant Chief #1 responded in his privately owned vehicle (POV) to the scene. He arrived on the scene at 1650 hours and reported to Central Dispatch that a motor vehicle had struck a utility pole, there were no injuries, and that power lines were down. He secured the area around the motor-vehicle crash site and the downed power lines. Assistant Chief #1 radioed for the power company to respond to the scene for the downed power lines. Assistant Chief #1 then radioed for fire police to block the southbound traffic at the intersection 1.8 miles north of the motor-vehicle crash site. He requested another crew to respond to the south end of the scene to block the northbound traffic (see Diagram 1). A volunteer fire fighter

from a mutual aid department was in the area of the motor-vehicle crash site and responded to the scene in his POV. Both POVs were positioned in the road just south of the motor-vehicle crash site with yellow flashers and blue lights activated. Fire Fighter #1 radioed from the fire station that the batteries in both of the fire department's two pumpers were dead. Assistant Chief #2, responding in his POV, radioed Fire Fighter #1 to respond in Rescue Truck 66. Fire Fighter #1 and the victim then responded in Rescue Truck 66 at 1652 hours. At 1654 hours, Fire Fighter #1 and the victim arrived at the intersection 1.8 miles north of the motor-vehicle crash site to block southbound traffic. Assistant Chief #2 arrived at the intersection at approximately the same time as Rescue Truck 66. Since Assistant Chief #2 was not needed at the intersection at this time, he proceeded to the fire station to man Ambulance 60 and wait for additional personnel to arrive. Fire Fighter #1 positioned the Rescue Truck south of the intersection, facing north, with the emergency lights activated. *Note: There were no flares, cones, or signs posted along the roadway or at the intersection.* Fire Fighter #1 and the victim stood near the Rescue Truck directing traffic. *Note: At the time of the incident, Fire Fighter #1 and the victim were wearing street clothes and were not wearing any highly reflective vests, belts, or coats. The victim's clothing consisted of dark pants and a dark blue winter coat.* At 1712 hours, a school bus stopped at the motor-vehicle crash site and informed Assistant Chief #1 that they needed medical attention for one of the students (a diabetic) on the bus. *Note: The school bus was heading northbound towards the elementary school for a high school sporting event.* Assistant Chief #1 radioed Assistant Chief #2 (who was at the station) to inform him that a school bus was going to meet him at the fire station with a diabetic student who needed medical attention. Assistant Chief #2 then pulled Ambulance 60 onto the apron of the fire station, awaiting the arrival of the school bus. At approximately 1720 hours, a civilian driver heading west stopped at the intersection, signaling to make a left turn (south). The victim walked over to inform the driver that the road was closed due to the motor-vehicle crash and the downed power lines. At 1721 hours, Assistant Chief #2 (driver), Medic #1 (emergency medical technician), and a fire fighter proceeded in Ambulance 60 toward the elementary school, looking for the school bus that was supposed to have met them at the fire station. At 1722 hours, the victim stepped back away from the driver's side window when a pickup truck traveling eastbound struck him. *Note: The posted speed limit at this section of the east-west highway is 55 mph. The Sheriff's Department estimated that the pickup truck was traveling approximately 20-25 mph at the time of the incident.* The victim was thrown approximately 32 feet from the point of impact to his final position. The victim was pinned under a pickup truck that was stopped in the westbound traffic lane (see Diagram 2). Fire Fighter #1 radioed Central Dispatch that a fire fighter was down. He reported the fire fighter had been struck by a motor vehicle and was pinned under another vehicle. Central Dispatch notified Ambulance 60 and a paramedic service of this incident. Ambulance 60 (en route to the elementary school) was rerouted for the downed fire fighter. Ambulance 60 was followed by Medic #2 (also responding to the diabetic medical call) in his POV. Ambulance 60 and Medic #2 arrived on the scene at 1723 hours. Medic #2 crawled under the front end of the pickup truck to assess the victim's condition. Fire fighters and civilians lifted (by hand) the pickup truck off the victim and moved the truck away from the victim. Medic #1 and Medic #2 rolled the victim over, placing him on a backboard. The victim was then

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loaded into Ambulance 60. At 1747 hours, the ambulance proceeded to a nearby hospital (arriving at 1753 hours) so that the victim could be stabilized before transferring him to the regional trauma center. At 1928 hours, the victim was transported to the regional trauma center where at 0323 hours the following day, he was pronounced dead.

CAUSE OF DEATH

The death certificate lists the cause of death as multiple injuries consisting of a massive closed head injury, pulmonary contusion, and chest injury.

RECOMMENDATIONS AND DISCUSSION

Recommendation #1: Fire departments should establish, implement, and enforce standard operating procedures (SOPs) regarding emergency operations for highway incidents.[1-5]

Discussion: Fire fighters operating at an incident on a highway are in danger of being struck by oncoming motor vehicles. SOPs can help establish proper traffic control measures when operating at an incident scene. SOPs should include but not be limited to the following: apparatus positioning, lane closures, methods to establish a secure work area, wearing appropriate protective clothing at all times, clearing traffic lanes, and releasing the incident scene back to normal operation.

Recommendation #2: Fire departments should ensure that personnel receive training in the proper procedures and the hazards associated with conducting traffic control.[1]

Discussion: The State of New York, Department of State, Office of Fire Prevention and Control provides standardized fire police training throughout the state. Fire police in the State of New York are designated as peace officers and are authorized (while on duty) to conduct traffic control. Fire police are classified as fire fighters whose specific assignment is to the fire police squad. The training covers proper visual and audible signals used for traffic control situations, suggested equipment (e.g. flares, cones or signs, flashlight with wand or a fluorescent lightwand, and a safety vest with reflective material) and its use, protective clothing (hard hat or helmet, raincoat with reflective material, or appropriate clothing for the weather), and personal safety issues. The New York State's Office of Fire Prevention and Control's *Fire Police Workbook* states that for regulating traffic at and around the emergency scene, "fire police should be posted at the busiest intersections (directing traffic by standing at the center or corner of the intersection so all motorists may see and be seen by you) on the emergency route. Only emergency apparatus and personnel should be allowed into that area." The workbook states, "it is not practical to verbally tell motorists what is expected of them. Only by using sign language will they understand whether they are to stop, start or turn." Fire Fighter #1 and the victim had not received any training (fire police or otherwise) regarding traffic control. Rescue Truck 66 was equipped with SCBAs, turn-out gear, flashlights, one flashlight with a red wand attachment, 13 orange traffic cones, 1 high visibility traffic vest labeled "Fire Police," and traffic flares. The victim and Fire Fighter #1 were not utilizing either a flashlight with wand or a fluorescent lightwand. The victim became exposed to moving traffic when he entered the intersection to inform a driver that the road was closed. The driver of the eastbound pickup truck that struck the victim reported that he slowed down as he was approaching the intersection because he saw the apparatus (Rescue Truck 66) on the southbound road with its emergency lights operating. The

driver of the eastbound truck also reported that he did not see the victim as he approached the westbound car where the victim was standing.

Recommendation #3: Fire departments should ensure that personnel wear personal protective clothing that is suitable to that incident while operating at an emergency scene, such as a highly visible reflectorized flagger vest (strong yellow-green or orange).[1,4,6]

Discussion: The need to wear personal protective clothing such as a reflectorized, brightly colored vest arises from the fact that personnel need to be highly visible while directing or blocking traffic near an incident scene. Fire fighters could wear either the strong yellow-green or orange to provide a suitable contrast with the background. A new voluntary consensus standard, ANSI/ ISEA 107-1999, American National Standard for High-Visibility Safety Apparel, provides guidance for use of high-visibility safety apparel to protect workers exposed to hazards of low visibility, including emergency response personnel.

Recommendation #4: Fire departments should establish pre-incident plans regarding traffic control for emergency service incidents.[1,2]

Discussion: The need to identify areas that have higher rates of incidents (e.g. motor-vehicle crashes) should be evaluated so that standard operating procedures for emergency personnel can be tailored to the needs of particular sites (e.g., blind curves or corners, hills or sloped areas, and high-traffic areas). Fire departments can work with local highway departments to identify problem areas and devise solutions to those problem areas in advance. The New York State Office of Fire Prevention and Control's *Fire Police Workbook* suggests that preplanning fire police response is a valuable tool. Experience and knowledge of local territory will help in creating pre-plans and in the establishment of standard operating procedures to make the response more efficient.

REFERENCES

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5. National Fire Protection Association [1998]. NFPA 502: standard for road tunnels, bridges, and other limited access highways. Quincy, MA: National Fire Protection Association.

6. FHA [1999]. Meeting the customer's needs for mobility and safety during construction and maintenance operations. Federal Highway Administration. http://www.fhwa.dot.gov/quality/HP-PA9.html

INVESTIGATOR INFORMATION

This incident was investigated by Mark McFall, Safety and Occupational Health Specialist, Division of Safety Research, NIOSH.

Photo. *Eastbound View of Intersection*

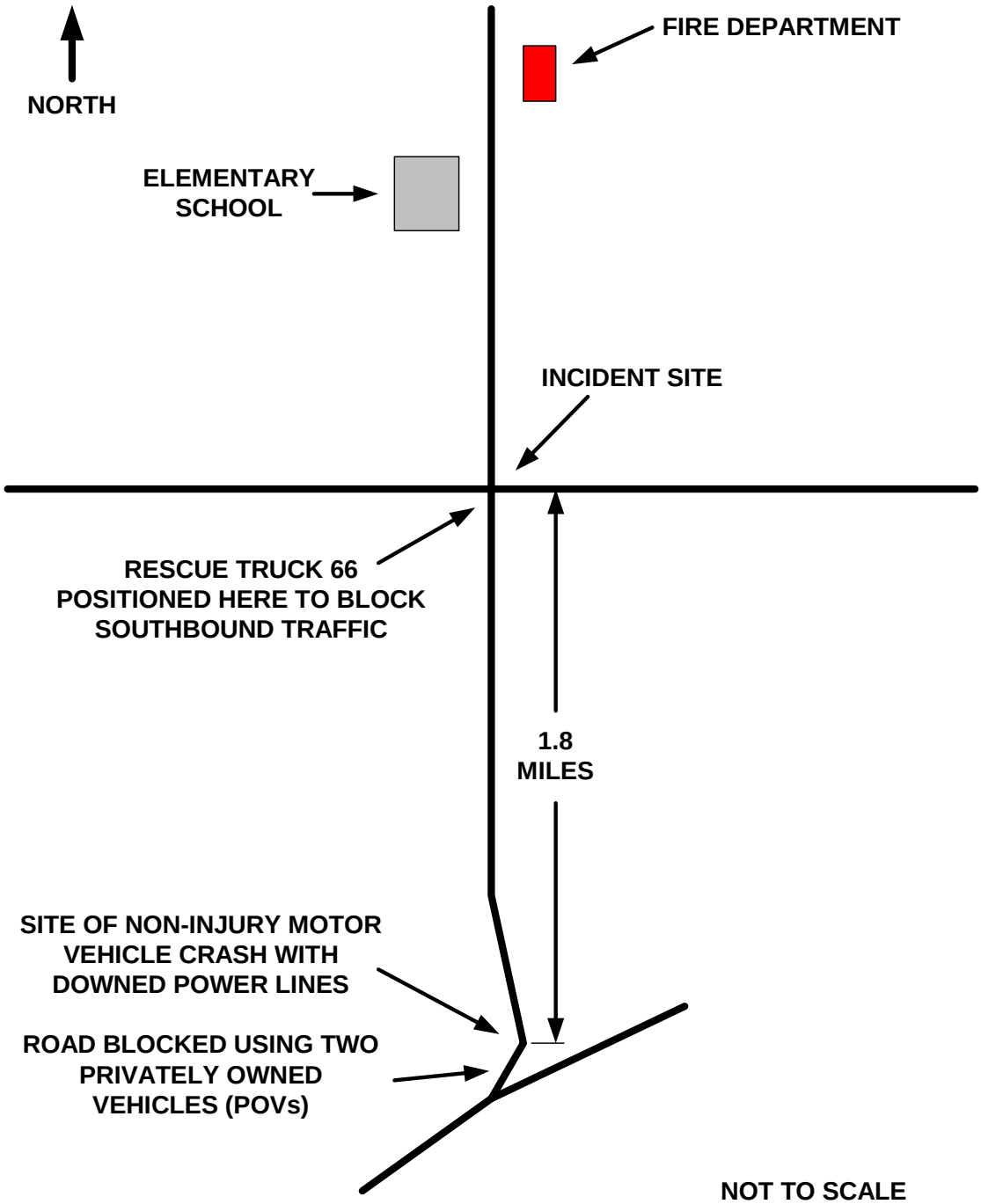

Diagram 1. *Area Map*

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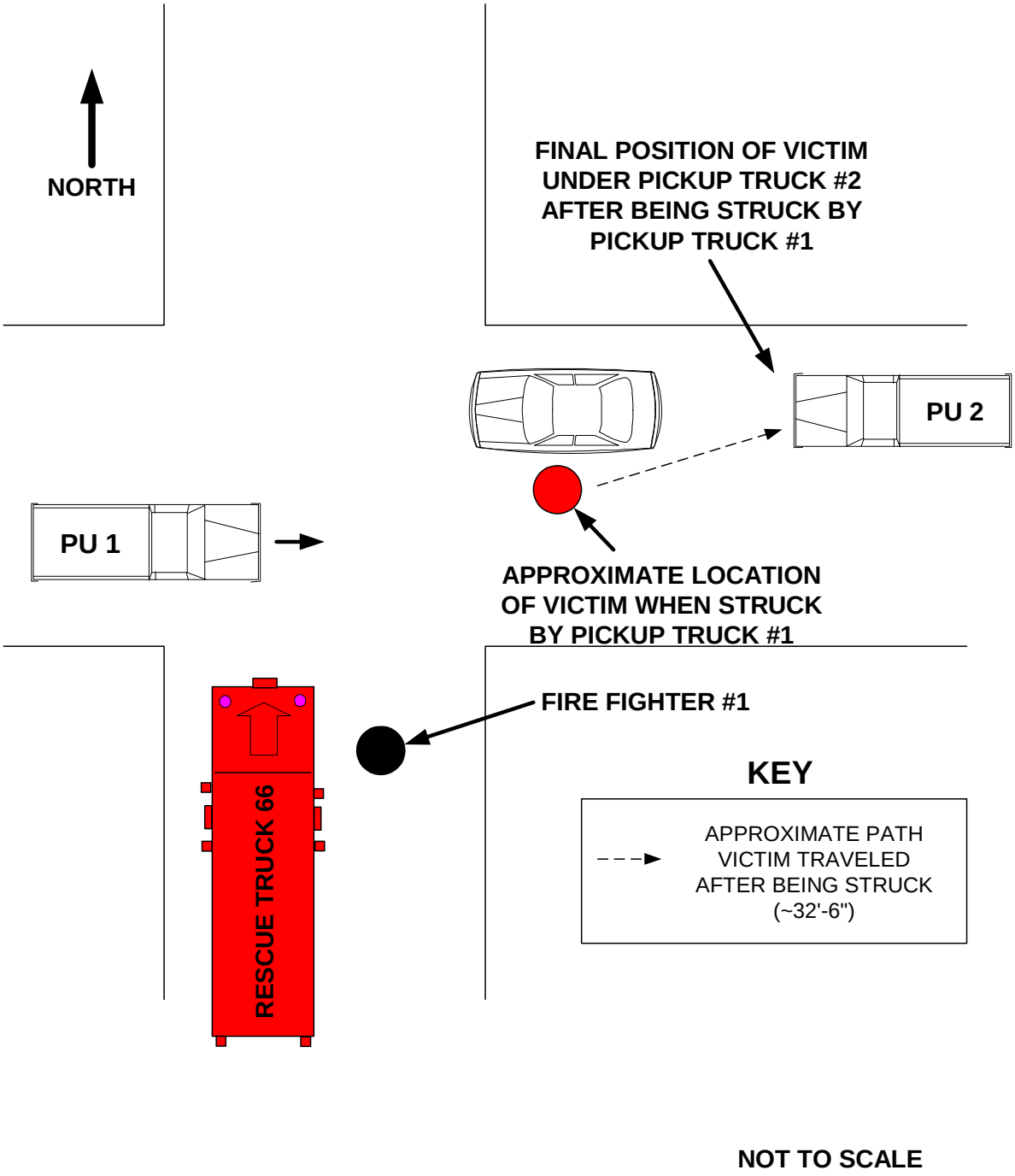

Diagram 2. *Aerial View of Intersection*