

NEW JERSEY DIVISION OF FIRE SAFETY

Firefighter Fatality and Serious Injury Report Series

**A North Bergen Firefighter is injured after falling from
a fire escape ladder at an apartment building fire**

Union City, New Jersey

Report Issued November 22, 1999



STATE OF NEW JERSEY
Christine Todd Whitman, Governor



DEPARTMENT OF COMMUNITY AFFAIRS
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INTRODUCTION

The investigation of this incident was conducted by the New Jersey Division of Fire Safety in conjunction with the New Jersey Department of Labor and the New Jersey Department of Health. This report was prepared in accordance with N.J.S.A. 52:27D – 25d, Duties of the Division. The purpose of these firefighter casualty investigations is to report the causes of serious firefighter injuries or deaths and identify those measures which may be required to prevent the future occurrence of deaths and serious injuries under similar circumstances. In some cases new information may be developed, or old lessons reinforced, in an effort to prevent similar events in the future.

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SUMMARY

On February 27, 1998 a career member of the North Bergen, Hudson County, Fire Department Firefighter David Velez, age 34, was working at the scene of an apartment building fire in the neighboring town of Union City. As he was carrying a 16-month-old child down a fire escape ladder from the second level of the building, the ladder shifted causing him to lose his grip. He fell to the ground on his back and landed on his SCBA cylinder while still holding the child inside his turnout coat. The fall resulted in serious spinal cord injuries and several broken vertebrae to Firefighter Velez. The child was not severely injured, suffering only minor cuts and abrasions.

The fire was determined by investigators of the Union City Fire and Police Departments to be set by an arsonist.

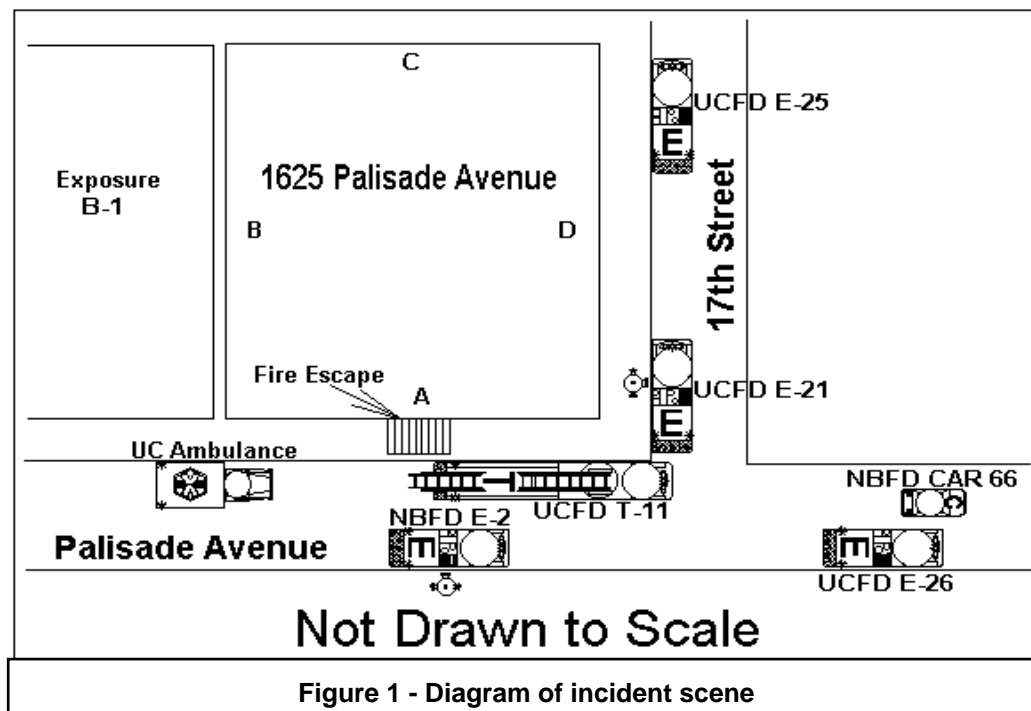
INVESTIGATION

The Incident

On February 27, 1998 Firefighter David Velez, a 5 year veteran of the North Bergen Fire Department (NBFD) was on duty and assigned to Engine Company 2. At 0449 hours, NBFD Engine 2 was dispatched for a mutual aid response as a second alarm assignment to a structure fire located at 1625 Palisade Avenue in Union City. The Union City Fire Department had been dispatched to the scene at 0446 hours. It is the normal procedure of the Union City Fire Department (UCFD) to utilize surrounding municipalities' fire departments on incidents requiring second alarms or higher.

The building was a five story of unprotected, Type 3, ordinary construction consisting of brick exterior bearing walls and wood joists on the interior. It was utilized as a multi-occupancy apartment building. It was classified as a non-life hazard use by the NJ Uniform Fire Code and as a use group R-2 by the NJ Uniform Construction Code.

On the first alarm assignment, two engines and an aerial apparatus from the UCFD responded to the incident. Also responding to the incident was UCFD Deputy Chief Robert Montagne. As the NBFD units were responding, DC Montagne reported over the radio that



there were multiple fires burning inside the structure and that it appeared they were intentionally set. He also requested that NBFD units assist with rescue and evacuation efforts at the scene.



Figure 2 - View of 1625 Palisade Ave. shown from Division "A"

Upon arrival at 0453 hours, NBFD Engine 2 was staffed by Captain Ronald Tompkins, FF Daniel Viscardo, who was the apparatus driver, and FF Velez. Captain Tompkins reported that when their apparatus had arrived at the Division "A"¹ side of the structure and he was still on the apparatus, he observed several people on a third floor fire escape landing. There was heavy black smoke issuing from the main entrance to the building, which was directly below the fire escape landing. Tompkins reported they seemed to be panicking and a woman was attempting to carry a baby down from the escape landing.

As he was leaving the apparatus with FF Velez, Tompkins told FF Viscardo to position the vehicle near a fire hydrant located across the street in case the engine was to be used for suppression operations. Tompkins and Velez, both with turnout gear and SCBA donned went to the area of the building's main entrance. At this point, two police

officers spoke to FF Velez about the building occupants on the fire escape above them. Tompkins then told Velez to go up on the fire escape to help the people down to the street level. Tompkins was then ordered by the incident commander DC Montagne to assist in stretching a second 1.75" handline into the structure and up to the second floor. At this time, FF Viscardo, after parking the apparatus, was in the process of donning his SCBA unit. At the same time, Velez, now on the fire escape landing, worked to calm the occupants who consisted of a father, mother and their 18-month-old son. Another female occupant now joined the group on the fire escape. FF Velez reported in an interview conducted during this investigation that all of the occupants on the fire escape were extremely upset due to the presence of smoke coming up from the main entrance. He also reported that the mother told him she was afraid of heights.

Velez decided it would be best to bring the child down to the street first, followed by the father, the mother and finally the other tenant. He opened his turnout coat and directed the father to place the small child inside. Velez then secured the child under his SCBA waist strap and attempted to close his coat, but was unable to due to the child's presence. Velez

¹Building geographic designations, N.J.A.C. 5:75 New Jersey Incident Management System, NJ Division of Fire Safety, Trenton, NJ.



Figure 3 - View showing fire escape ladder on Division "A" where FF Velez fell

began to climb down the ladder, which was a vertical drop-down type suspended by a cable over a pulley and counterbalanced with a weight on the end of a cable. This type of ladder is not secured tightly to the fire escape frame, rather it moves vertically through a set of guides at the fire escape landing and is not secured at all at the bottom of the ladder. At about the point when Velez was two rungs down from the top of the ladder, his weight caused the heel of the ladder to suddenly shift horizontally across the doorway of the front entrance below. Velez lost his grip on the ladder and began to fall backward. Still holding the child inside his coat, he hit his head on an adjacent second floor windowsill and fell to the sidewalk fifteen feet below. It was at this point that FF Viscardo was crossing the street to help Velez with the rescue effort and he witnessed Velez falling from the ladder. As Velez landed on his back, on top of his SCBA cylinder, the child was dislodged from his coat due to the impact of the fall and landed on the sidewalk approximately

three feet from Velez. A civilian immediately picked up the child and carried him to a nearby ambulance. The baby suffered only minor cuts and abrasions. FF Viscardo, arriving at Velez's location immediately called for EMS and reported a firefighter was down. At 0505 hours the incident commander DC Montagne radioed for EMS and specifically advanced life support (ALS). At this time, Nbfd Battalion Chief Charles Severino arrived at the scene and found Viscardo, and Captain Tompkins, who had returned to Division "A" after being radioed that Velez had fallen, both caring for Velez. Viscardo had removed Velez's SCBA. BC Severino asked Velez how he was doing and Velez responded that his lower back was "killing" him. Upon the arrival of an EMS unit from Union City on the scene, Velez was packaged on a long spine board and loaded into the ambulance for transport to Jersey City Medical Center. At this time, the Nbfd units were released from the incident scene, and BC Severino traveled to Jersey City Medical Center to be with FF Velez.

Shortly after Velez was transported from the incident scene, the fire was declared under control. Additional mutual aid was provided by the Weehawken Fire Department.

Firefighter Velez's Injuries

Firefighter Velez was transported and admitted to Jersey City Medical Center by Union City EMS. Velez's injuries included spinal cord trauma and several broken vertebrae. The

injuries did not result in paralysis; however, Velez was placed in a body cast to facilitate the healing process.

Fire Origin and Cause Investigation

Captain Kenneth Kandrac of the Union City Fire Department conducted an investigation into the origin and cause of the fire.

According to his report, firefighters from UCFD Engine Company 1, the first unit to arrive at the scene, found that the full-length glass and aluminum frame door latch mechanism at the grade level primary means of access at Division "A" had been locked, preventing egress for building occupants. Firefighters made forcible entry through the glass panel. Upon entry, they observed several distinct and separate fires within the first floor hallway. A heavy to moderate smoke condition was present and a liquid residue was found on the floor that made the marble floor slippery.

Captain Kandrac determined that the fire originated within the first floor foyer, at floor level and within Class A and B materials. The fire was started at four separate and distinct locations as the direct result of open flame and deliberate placement and ignition of a liquid fire accelerant.

Kandrac noted that fire patterns within the foyer were consistent with someone placing individual plastic containers filled with a flammable liquid on the floor and pouring additional flammable liquid on the floor surface near the containers. This liquid then puddled and followed natural floor contours under individual apartment doors and into openings under and around the base of the corridor walls. Once this liquid was ignited, the fire quickly extended to cause major damage to the first floor foyer and two first floor apartments.

Examination of the second floor revealed a plastic water container and newspapers enclosed in plastic trash bags. Systematic examination of this device by Kandrac revealed the plastic container held approximately one and one quarter gallons of a liquid that was later determined to be gasoline. Several paper matches were recovered from the immediate area and a section of carpet that had been saturated with liquid fire accelerant was removed by Detectives from the Union City Police Department for further study and preservation as evidence.

During his examination of the first floor foyer, Kandrac found that a duplex electrical outlet had a plug inserted into it that had been altered to cause a dead short. This caused the circuit breaker to trip resulting in the electrical power to the hallway lighting being interrupted. Additionally, two electrically operated interconnected smoke detectors located on the ceiling of the first floor foyer had been pulled from their mounting brackets prior to

the fire, possibly to expose wiring to direct flame contact causing failure of the electrical circuit and rendering the detectors inoperable.

Captain Kandrac concluded that the fire was deliberately set and that accelerants were used to extend fire throughout the foyer. He further concluded that the fire was intended to trap the building occupants within their apartments and cause significant destruction to the structure.

ANALYSIS

Personal Protective Equipment

An inspection was performed on Firefighter Velez's Personal Protective Equipment (PPE) which revealed that all components were in full compliance with the New Jersey Public Employees Occupational Safety and Health Act (PEOSHA).

Breakdown of Communication

At this incident, the main focus of the operation was the suppression of the fires in the interior of the structure. Accordingly, the majority of the fire service staffing was concentrated inside the structure. At the time of Firefighter Velez's accident, there were approximately fifteen firefighters and/or officers on the scene.

Upon arrival, Captain Tompkins and Firefighter Velez believed that the occupants on the fire escape were in sufficient danger to require their immediate removal. After Tompkins was assigned to assist with a hoseline being used for suppression operations inside the building, he did not advise Deputy Chief Montagne that he had ordered Velez to go on the fire escape to assist the building occupants. Montagne stated that he was not aware Velez was on the fire escape until after Velez had fallen. Firefighter Velez was left with the choice to perform his task by himself without the benefit of a fire service ground ladder; or wait for assistance from Firefighter Viscardo after he had positioned his apparatus and donned his protective equipment. Velez chose to begin the rescue operation without assistance. At the time that Viscardo had completed his assignment and was able to reach Velez's location, he had already fallen to the sidewalk.

Not knowing that Velez had been ordered to the fire escape, DC Montagne did not have the ability to assign additional personnel to the task, or delay the task until additional personnel were available and a ground ladder was deployed.

Safety Officer

At this incident the Union City Fire Department did not assign a dedicated safety officer to observe operations and terminate potentially unsafe actions. Normally, when operating under an incident management system, which the department was operating under at this incident, the incident commander retains this function if it is not delegated to a subordinate.

First and Second Alarm Response

The first alarm response for this incident from the UCFD was two engines, one aerial apparatus and one chief officer. Staffing on each piece of apparatus was one officer and two firefighters. The total staffing for the first alarm complement was nine plus the one chief officer.

A recommended first alarm staffing number for this type of occupancy is sixteen firefighters and one chief officer responding with three engines and one aerial apparatus².

The second alarm that was struck at 0449 hours, three minutes after the initial alarm, brought an additional UCFD engine and NDFD Engine 2 which arrived at 0453 hours along with a Nbfd chief officer at about 0505 hours. This brought the total firefighter staffing level to fifteen. Apparatus and staff from the Weehawkin Fire Department arrived at the scene a short time later.

The level of non-chief officer staffing present after the second alarm was one short of the sixteen as noted previously for first alarm staffing.

Compliance with Regulations

At this incident, no violations of the New Jersey Uniform Fire Safety Act were noted with regard to the structure. Inspection records provided by the Union City Fire Prevention Bureau revealed that the building had been inspected as required and no violations were found, including specifically the fire escape. Additionally, no violations of the regulations of the Public Employees Safety and Health Act were noted with regard to fire department operations.

²*Principles of Fire Protection; Arthur Cote, P.E. and Percy Bugbee; National Fire Protection Association, Quincy, MA.*

LESSONS LEARNED

Safety Officers

Regulations of the Division of Fire Safety N.J.A.C 5:75, Incident Management System³ mandate the use of a safety officer(s) on all incidents. The incident commander may retain this function, however at larger incidents the incident commander needs to delegate this responsibility to a subordinate to maintain effective span of control. This action lessens the load on the incident commander and allows for continuous monitoring of safety conditions at the incident scene.

Communication within the Incident Management System

In order for the Incident Commander to have a clear picture of the status of the situation and the resources available, there must be an ongoing flow of information between the Incident Commander and his/her subordinates with respect to operations they are involved with. The Incident Commander is directly or indirectly responsible for all operations on the incident scene and the safety of personnel. In order to fulfill this responsibility, the Incident Commander needs to make decisions based on as much information as possible. This requires those operating on the scene to act as the Incident Commander's "eyes and ears" to keep the Incident Commander informed with regard to incident status, personnel assignment, equipment deployment etc.

Use of Fire Service Ladders

While it is understandable that firefighters will need to improvise or use climbing equipment such as fire escape ladders or non-fire service ladders that may be present at incident scenes, these practices should be viewed as the exception rather than the norm. In this case Firefighter Velez's decision to use a non-fire service ladder was based on his attempting to ensure the safety of the victims on the fire escape.

It should be remembered however, that fire service ladders should be the preferred devices for operations above grade under normal circumstances. Properly tested, maintained, and trained on; fire service ladders offer reliable use and greater safety for firefighters working in elevated positions.

³ N.J.A.C. 5:75, *Incident Management System*; NJ Department of Community Affairs, Division of Fire Safety, Trenton, NJ.

Staffing of Apparatus and First Alarm Response

As was described previously, Nbfd Engine 2 was staffed by a captain and two firefighters. It should be noted that an additional firefighter assigned to this engine could have assisted Firefighter Velez with the raising of a ground ladder to the fire escape and the removal of victims.

In studies conducted by some cities and universities involving firefighting evolutions conducted for comparative purposes, five-person fire suppression companies were judged to be 100% effective in their task performance, four-person companies 65% effective, and three-person companies 38% effective⁴.

Additionally, as noted previously, the total staffing for the first alarm complement was nine plus the one chief officer at this incident. Only after arrival of the second alarm apparatus did staffing levels approach a recommended first alarm staffing number for this type of occupancy of sixteen firefighters and one chief officer.

Fire departments should seriously consider increasing staffing of apparatus and/or the number of apparatus designated to respond on a first alarm assignment to improve efficiency and enhance safety of operations.

⁴ *Managing Fire Services*, International City Management Association, 1120 G Street, N.W., Washington, DC 20005

CONCLUSION

The injuries sustained at this incident can be directly attributed to the use of a fire escape ladder that was not designed to be used for fire department rescue operations. However, it would be simplistic to formulate a conclusion based on that fact alone.

Although adequate staffing was not available at his location at the time due to the concentration of firefighters inside the structure, FF Velez felt there was sufficient risk of harm to the building's occupants and found it necessary to proceed without assistance and suitable equipment. His decision to use a non-fire service ladder was based on his attempting to ensure the safety of the victims on the fire escape. An additional firefighter assigned to Firefighter Velez's engine could have assisted with the raising of a ground ladder to the fire escape and the removal of victims.

Without being informed of Velez's assignment, the Incident Commander was not accorded the opportunity to assign additional personnel to assist; or terminate the operation.

The Incident Commander, due to his involvement in directing operations at the incident, was unable to act effectively as a safety officer. The use of a designated safety officer provides an extra margin of safety for personnel at the scene through the observation and termination of potentially unsafe operations.

It must be remembered that choices on the fire ground are made on the basis of the number of tasks versus the available resources. While most certainly additional staffing may have helped to prevent this injury, Firefighter Velez did the best he could with the resources available.

Fire departments must undertake the often times difficult task of ensuring adequate staffing levels by providing a better understanding of the department's needs to their governing body and working to balance these needs against any budgetary limitations that may exist.