

# CLOSE CALL REPORT



FIREFIGHTER INJURY  
FIRE AND RESCUE ACADEMY  
OCTOBER 12, 2005



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## Event Synopsis

On October 12, at approximately 0830 hours, a demonstration took place at the Fairfax County Fire and Rescue Academy. This demonstration consisted of a firefighter emergency escape device manufactured by CMC Rescue Equipment. This device, called the "Escape Artist," is designed as a tool for an emergency bail-out procedure. The device was demonstrated by a representative of High Angle Associates (known as "the vendor"). Firefighters were attached to the device by utilizing a Yates Kevlar Truck Escape belt also provided by the vendor. The demonstration consisted of attaching the device to a firefighter in full protective clothing, then allowing the firefighter to exit the fourth floor window of the tower building. A safety net was located below the firefighters at the first floor level. The distance between the fourth floor window and the net was approximately 30 feet. Prior to the demonstration of this device, the vendor gave a briefing on the exterior of the tower structure.

During the process of the demonstration, a Fairfax County Fire and Rescue Department member (known as the "member") descended in a rapid, uncontrolled fashion. He struck the second floor ledge with the back of the SCBA bottle and then landed flat on his back on the metal bracket that holds the net. He sustained injury to his back. The injury was fully recovered.

The device is designed to lower a firefighter "hands-free" at a slow descent. The descent rate can be increased by squeezing the device. With the device squeezed, the descent is supposed to increase, but not at a rapid rate. The member was under the impression he had to squeeze the device for it to descend. When the rapid descent started, his instinct was to continue squeezing, which only increased the speed to that of a free fall.



## Investigation Team

A team was activated to investigate the circumstances of the injuries. The team consisted of Battalion Chief John Gleske, Captain John Price, Captain Jim Tolson, Captain Steve Ruble, and Captain Rick Atkins.



## Incident Information

Date: October 12, 2005  
Time: Approximately 0830 hours  
Incident number: N/A  
Incident Address: 4600 West Ox Road, Exterior Tower Building  
Type of Construction: N/A  
Fire Box number: N/A

### Weather<sup>1</sup>:

Time: 0830  
Temperature: Mid 60's  
Precipitation: None  
Wind: Variable 7-9 mph  
Sky: Slight Overcast, 7 mile visibility

1. Farmer's Almanac.com, Weather History, Dulles, VA.



## Findings, Discussion and Recommendations:

### 1. The device was not reviewed by the Innovative Ideas and Equipment Committee or the Technical Rescue Operations Rope Working Group.

The purpose of the Innovative Ideas and Equipment Committee is to enable members of the Department to submit new ideas and new equipment to be considered for implementation. There is no requirement for the committee to review all new equipment. In this case, the device was presented directly to the Academy with no formal review of the specifications or verification of meeting standards (NFPA, Technical Rescue Operations Rope Working Group).

### Recommendations:

A. There should be a sanctioning body for review of all new equipment that involves life safety. The review would include specifications, safety issues, and verification that the equipment meets applicable standards. If it is not in the scope of the Innovative Ideas and Equipment Committee, it should be a joint effort between the Training Division and the Safety and Personnel Services Division.

### 2. There was one briefing on the operation of the device at the exterior tower building.

The group was so large that there was no way to verify that all participants heard the information. The injured member apparently was not aware or did not understand the operation of the system being demonstrated. Some personnel involved in this demonstration arrived later and did not attend the briefing conducted by the vendor.

### Recommendations:

- A. The briefing should have taken place in a noise-controlled environment, such as a classroom.
- B. Student understanding should have been confirmed using questions and answers with the participants involved. Group size should be controlled to minimize misunderstanding.
- C. Follow the procedures in accordance with the Training Manual, Section III, C. Life Safety Rope Training, which states: "Units conducting training at the Fire and Rescue Academy shall: Review objectives of the drill and discuss pertinent safety considerations with personnel."



- 3. The system was not “pre-loaded” in a clinical setting prior to ascending to the location of the field demo.**

**Recommendations:**

- A.** Each person should have been required to set-up the system on the ground on a level surface or in the classroom.
- B.** Then each person should have practiced the simulated descent by leaning and walking back. That would have directly familiarized them with the operation prior to testing it at a high angle.

- 4. There was no formal safety officer appointed for the operation.**

The instructors involved with the demonstration were under the impression that the vendor was acting as the safety officer. It is unclear if this was actually discussed with the vendor.

**Recommendations:**

- A.** Follow procedures in accordance with the Department Training Manual, Section III, C. Life Safety Rope Training, which states: “Appoint a Safety Officer who shall be responsible for checking knots, robe abrasion, anchor points, and hauling or lowering system design, etc.”
- B.** At no time should a vendor be allowed to act as a safety officer during evolutions that involve Department personnel. It should be someone from our Department who is qualified to act in that capacity and has the safety of our members as the utmost responsibility.

- 5. A safety belay was not attached to the firefighters participating in the “bailout” demonstration.**

The reason given for not using a belay was to simulate a real bailout situation. The instructor felt the belay would slow or possibly defeat the purpose of testing the bailout device. Lack of a safety belay was also identified in the Significant Injury Investigation Team report on FF Ron Ward, Retired (fall injury from rope exercise).



### Recommendations:

- A. Follow the procedures in accordance with the Department Training manual, Section III.C. which states that if a live load is placed on a system: "A safety belay shall be attached to all personnel and victims."
  - B. Once it was determined that the device was safe to use and a more realistic test needed to be performed, Section III.C. allows deviation from procedures provided it is "pre-approved in writing by the Chief Training Officer or his designee. " This written pre-approval could have included lowering the height (the top floor of the interior tower building is designed for this use<sup>1</sup>), and use of the air bag beneath.
- 6. At one point during the demonstration, the device was attached to a SCOTT Air Pack which is not considered an approved harness for rope operations. One Department member, who participated in the demonstration, stated that he voiced concerns about the use of the SCOTT harness, but was told by an instructor that the demonstration would continue. Both members were equal in rank.**

### Recommendations:

- A. Follow procedures in accordance with the Training Manual, Section III, C. Life Safety Rope Training, which states: "Appoint a Safety Officer who shall be responsible for checking knots, robe abrasion, anchor points, and hauling or lowering system design, etc." It is believed a Safety Officer would never have allowed a SCOTT harness to be the only means of securing to a rope.
  - B. Follow the procedure in accordance with the Training Manual, Section III.C. which states that if a live load is placed on a system: "A safety belay shall be attached to all personnel and victims." The safety belay should have been attached to a certified harness and not the air pack.
  - C. The demonstration should have been suspended, altered or terminated after the safety issue was raised and appropriately addressed.
  - D. Safety concerns should always be evaluated regardless of who, or what rank, raises them. The on-duty Safety Officer could have been contacted for guidance.
- 7. The demonstration continued after the injury event without thorough inspection of the equipment.**

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<sup>1</sup> The top floor of the interior tower building to the top floor elevator lobby is designed so trainees can become familiar with transitioning to going "on rope" at a height of one story over a simulated window ledge.



**Recommendations:**

- A. The demonstration should have been suspended, altered or terminated after the fall took place.
  - B. A briefing should have been conducted to discuss the possible failure of the equipment or the possible incorrect use.
- 8. The injured member, despite free falling three stories and landing on his back, denied any injury. He was asked by Academy personnel several times. He attended the rest of the demonstration until it was complete. If the patient had been a citizen injury, we would have strongly suggested they be transported to a trauma center due to mechanisms of injury. Department personnel need to understand that injured firefighters are going to deny treatment and/or transport in response to an injury. This may be in part due to embarrassment from the incident occurring. The injured employee started to feel pain and decided to seek treatment at the Public Safety Occupational Health Center (PSOHC). PSOHC referred him to Access of Fairfax via his personal vehicle due to their x-ray machine being down and the patient claiming the pain was not severe. Access of Fairfax x-rayed him and had him placed on a backboard and transported via ambulance to INOVA Fairfax Hospital. The injured firefighter was kept overnight for further testing and then released to follow-up with an orthopedic specialist.**

**Recommendations:**

The following recommendations are for Department personnel to take heed. With the injured employee denying any injury or pain, there is nothing more that could have been done in this situation.

- A. When a member sustains an injury that would qualify as a trauma due to mechanisms of injury, they should be convinced (not forced or ordered) to seek treatment through coaching and encouragement.
  - B. Consideration should be given to directly transporting the injured member to a trauma center.
  - C. The member should be prohibited from further participation in any practical exercise until they get checked out.
- 9. Injury investigators did not have the device to evaluate and inspect because the vendor took it with him. This was in part due to the fact the employee initially denied being injured. An attempt was made to secure the device for the investigation, but that attempt was unsuccessful.**



### Recommendations:

- A. A legal release should be obtained when testing new equipment that would require the vendor to surrender the device or equipment in the event that Department personnel sustain injury during the testing.
- B. The vendor should be made aware of the requirement to surrender the equipment as a condition of the demonstration.
- C. The vendor should be required to sign a form containing liability limiting language similar to the ride-along agreement (FRD- 276) which requires the vendor to indemnify and hold harmless the Fire and Rescue Department and the County in the event of an employee or civilian injury during an evaluation or demonstration of the equipment or item when the vendor is the one conducting the training.

**10. The Virginia Department of Fire Programs (VDFP) requires an instructor-student ratio of 1:5 for practical training exercises. There was one Academy instructor and the vendor during the beginning of the training and later another Academy instructor. There were approximately 15-20 students.**

### Recommendation:

- A. Follow the VDFP guidelines and require one Academy instructor for every five students for practical evolutions.
- 11. There are no current inspection records for the air bag or the safety net. It appears neither has ever been tested. If they have been tested, there is no documentation available to prove it. This was also identified in the Significant Injury Investigation Team report on FF Ron Ward, Retired.**
- A. Have the air bag and safety net tested by a qualified vendor annually.
  - B. Mandate and enforce the use of a safety belay until the air bag can be tested (certain training is allowed without a safety belay provided it is over the center of the air bag).