

**New York State Department of State  
Office of Fire Prevention and Control  
Memorandum**

To: William Rifenburgh, Deputy Chief  
Fire Services Bureau  
From: Andrew Jones, Fire Protection Specialist  
Fire Services Bureau  
Re: Test Burn  
Date: November 25, 2009

As a result of the incident that took place in a recent Firefighter One Live Burn Unit where damage resulted to equipment worn by members of the class a test burn was conducted to replicate the conditions that existed during their lesson. On November 24, 2009 at approximately 17:00 hours at the Westchester County Department of Emergency Services Class A Burn Building a test burn was conducted. The following helmets were used and are numbered to reflect the attached photos that depict the equipment; (1) Bullard Firedome II Firehelmet Model FH-2100 date of manufacture 10/31/88 Lot # 103188, (2) Bullard Firedome II Firehelmet Model FH-2100 (unknown date of manufacture, last date of model manufacture 1992), (3) Bullard Firedome Models FH2192 & FH2192A date of manufacture October 1994 lot # 9410, (4) Cairns & Brothers, Inc. 660-C Metro at time of construction was compliant with NFPA 1972 which was incorporated into NFPA 1971 in 1997, (5) Cairns & Brothers, Inc. 662C Metro II date of manufacture 1/31/90.

The Burn Building at the Westchester County Fire Training Center is a Class Burn Room that is designed to conduct Live Fire Evolutions and is lined with thermal tiles. The room is 12 by 12 with a doorway on one side and a window on the opposite side. The fuel load consisted of two wood pallets and one half bail of hay. The fire was also covered with two metal doors at 45 degree angles in one corner of the Burn Room. In order to simulate the approximate height of the members in the room wearing the gear in question, they were placed at a height of 41 inches from the floor to the base of the helmets and were 5 feet away from the base of the fire. They were placed on wood pallets that were stood on end. There were two Thermal Imaging Cameras that were used in the room with one that recorded to a remote VCR to record the temperature conditions in the room. A second Thermal Imaging Camera was utilized to take various temperature readings at all levels of the Burn Room and also to determine the temperatures of the surface of the helmets. Helmets numbers 3, 4, and 5 were in the Burn Room from the incipient stage of the fire. Helmets numbers 1 and 2 were brought into the Burn Room just prior to the fully developed stage and all were left in the room until the beginning of the decay stage. Temperature readings of all the helmets were between 250 degrees Fahrenheit and 300 degrees Fahrenheit. Ceiling temperatures were approximately 650 degrees Fahrenheit.

The helmets that sustained damage to the construction of the actual helmet were numbers 1 and 2. These were the Bullard Firedome II Model-2100. Number 3 and 4 had damage to the eye shields but no damage to the actual helmets or to helmet number 5. Helmet number 1 had significant damage to the eye shield and helmet number 2 had no damage to the eye shield but this was not the shield that came with the original helmet and is a high heat shield. Pictures were also taken of the helmet that is issued to me and was worn during the test burn. They note that there is no damage to the helmet in anyway including no damage to the reflective tetrahedrons. This helmet is a Cairns 1010 with a date of manufacture of 10/27/05.

This test burn was not designed to single out the Bullard helmets but to reinforce the issue of supplying members participating in Live Burns that they have equipment issued to them that meets the current nationally recognized standards. Lesson learned that can be passed onto Instructors carrying out Live Burn Evolutions are the following; 1. Ensure that members are supplied with gear that meets or exceeds current nationally recognized standards, 2. Helmets that state that they are NFPA 1972 compliant are outdated as this standard was incorporated into the NFPA 1971 standard prior to 1997 and is outside of the recommended 10 year replacement, 3. The use of Thermal Imaging Cameras are an excellent resource to ensure safety, 4. Following the OFPC Live Fire Policy or more restrictive County Policies is paramount to the safety of all Live Fire Burn Evolutions.

A special thanks to the Westchester County Department of Emergency Services staff including the Westchester County Department of Emergency Services Deputy Commissioner and County Fire Coordinator John Jackson, Fire Training Technician Luci Labriola-Cuffe, Fire Training Assistant Joseph Primerano, CFI's James Lennox, Robert Benz, Kevin Mignogna, James Sheridan, Tom Duffy, William Perritt and F. J. Spinelli.

Respectfully submitted,

Andrew T. Jones, Jr., FPS 1  
NYS DOS OFPC  
Fire Services Bureau

cc. Thomas Wutz, Chief Fire Services Bureau  
cc. John Jackson, Westchester County Fire Coordinator