

INTRODUCTION

This report has been prepared by the State Bureau of Fire Safety, Division of Housing and Development, Department of Community Affairs.

Subject: Firefighter Fatality

Location: 540 Main Street, East Orange

Date: March 4, 1989

Date of Report: February 1, 1990

This report is based on visits to the site where the fire occurred, interviews with members of the East Orange Fire Department, including personnel present during the fire, and a review of pertinent documents.

This report describes conditions at the fire building and presents an analysis of collected data. It is not intended that this report pass judgment on, or fix liability for, the loss of life resulting from this fire. It is our intention to document what happened at this fire and to use this information to recommend positive improvements to prevent recurrences.

FIRE DEPARTMENT

The City of East Orange Fire Department is composed of full time career firefighters. There are 126 firefighters manning 8 companies, supervised by 42 captains, 10 deputy chiefs, and one chief. There are 5 engine companies, 2 truck companies, and one rescue company as well as a training unit and a fire prevention bureau that includes a full time police officer attached for arson investigation. The manpower on duty the day of the fire consisted of:

CAR #3

Chief Curcione
Firefighter Sorice
Firefighter Hayes

ENGINE #1

Captain Malia
Firefighter Donovan
Firefighter Counts
Firefighter Jones

ENGINE #2 (2nd alarm)

Captain Spadone
Firefighter Sims
Firefighter Benson
Firefighter Caldwell

ENGINE #3

Captain Maguire
Firefighter Head
Firefighter Guthrie
Firefighter Fortunato

ENGINE #4

Captain Spann
Firefighter Watson
Firefighter Hinton
Firefighter Barrett

ENGINE #5

Captain Daly
Firefighter Brown
Firefighter Wilson
Firefighter Barnhardt

TRUCK #2

Captain Small
Firefighter Southwick
Firefighter Harris
Firefighter Wilson

RESCUE #1

Captain Poppalardo
Firefighter Fitterer
Firefighter DeNicola
Firefighter McDonald
Firefighter Intico
Firefighter Scholl

TRAINING

Training is conducted in-house by a deputy chief and captain. This is an ongoing program and the NFPA 1000 series is used as a guide for training of firefighters.

The department takes advantage of courses such as those developed by the National Fire Academy and other seminars and training as it becomes available. The city of Newark provided the Incident Command Course, developed by the National Fire Academy, to East Orange officers. This was planned prior to the fire and scheduled to be given in April, 1989.

THE FIRE

The fire department was dispatched to 540 Main Street at 2:09 p.m. on March 4, 1989. Investigations indicate that the fire may have been burning as long as an hour and a half before being reported. The first alarm response consisted of Engines 1, 2, and 4, Truck #2, Rescue 1 and Car #3. In addition, the manpower from Truck #1, which was out of service, was dispersed on Car #3, Rescue #1 and Engine #1, making a total first response of 18 firefighters, 5 captains, and one deputy chief. At 2:22 p.m. the Deputy called for Engine #2, which responded with one captain and 3 firefighters.

Deputy Chief Patrick Curcione, tour commander, ordered #1 Engine Company to connect to the sprinkler connection and hook up to a hydrant.

Engine #5 crew members advanced a 1-3/4 inch line of 5 lengths into the fire building from Engine #1. Rescue #1 was able to advance one 1-3/4 inch line of 7 lengths into the fire building and also begin ventilation by breaking out the show windows on the south side (Main Street) and cutting holes in the floors adjacent to the show windows in order to permit smoke and gases from the basement fire to escape.

Engine #4 was ordered by the deputy chief, as they were en route, to connect to the hydrant at Prospect Place and the rear of the Muir Building. Two members of this crew advanced a 2-1/2 inch line into the basement from Engine #1.

Truck #2 was ordered to a position in front of the six story portion of the building (Main Street side) and to ventilate the roof. Smoke could be seen escaping from an elevator shaft. They were also to supply lights for the interior firefighting operation. Engine #2 was called to the fire at 2:23 p.m. to hook up to a hydrant on Lincoln Street and feed Engine #1. The first hydrant they tried was not functioning so they had to connect to a second one.

At this time, the fire was located in the southern portion of the building in the basement and two 1-3/4 inch hand lines were being applied to it from a location at the bottom of the basement stairs. One of the lines was reported as being ineffective. The extreme heat and copious amounts of black smoke being produced by the fire in the basement made their way to the floor above by way of the open stair connecting these two floor levels. Firefighters operating handlines from this location were unable to stand upright and, when traversing the stairs, were forced into a crawling position by the heat passing above them. While it was not an ideal location from which to fight the fire, it was the only place in the basement providing a foothold. Firefighters were prevented from advancing closer to the seat of the fire, where their handlines would have been more effective, by the heat being generated there. The large volume of smoke reduced visibility to near zero.

Firefighter Jones, of Engine Company #1, assisted the first arriving company with the sprinkler siamese connection. He then proceeded into the building where he met Captain Spann and firefighter Barrett of Engine Company #4. All three were wearing self-contained breathing apparatus (SCBA) at this time. The three men exited at the rear of the building. Firefighters Scholl of Rescue #1 and Hayes of Car #3 met Jones there and the three proceeded to the second floor rear where they ventilated by opening windows. Scholl and Hayes stated that they heard Jones' low-air warning bell sound on his breathing apparatus. All three men removed their masks as breathing was not difficult in this part of the building.

Shortly thereafter, firefighter Hinton, of Engine Company #4, noticed firefighter Jones exit at the rear and walk around the outside of the building towards Main Street and the front of the store.

Jones was next seen by firefighter Counts of Engine Company #1, who saw Jones as he (Counts) was leaving the building by the main entrance to change his air bottle. He saw Jones proceed into the building alone through the main entrance. No one recalls seeing Jones change either his bottle or his breathing apparatus.

It has not been established how firefighter Jones entered the basement. He was last seen by Counts about 10 - 15 feet into the front door. The next person to see him was Captain Daley of Engine Company #5 who was manning a 1-3/4" line in the basement with firefighter Brown, of Engine Company #5. Daley heard Jones calling for help. He told Brown to stay where he was on the stair landing while he went to look for Jones. He located Jones in the basement. Jones, who was not wearing his helmet nor the face piece for his SCBA, appeared disoriented. Grabbing Jones, who outweighed him by approximately a hundred pounds, Daley guided him to the stairs. As the two men started to ascend the stairs, Daley lost his footing and fell. He was out of air and thought Jones was on his way out. Daley made his way back to the stairs and proceeded out of the building.

Firefighter Brown, who was still operating a 1-3/4" line from the base of the stairs, then encountered Jones. Both men fell to the basement floor and became separated. Brown did not see Jones after that.

Brown, whose warning bell was ringing indicating that he was running out of air, was found by firefighter David Fitterer of Rescue #1 and guided to the stairs and handed to Captain Pappalardo, of Rescue #1, who directed him out of the building.

Fitterer returned to the area where he had found Brown and, looking a little further, found firefighter Barrett, of Engine Company #4, who he guided to the stairs where others lead him out.

Firefighter Barrett reported that he and Captain Spann, of Engine Company #4, were in the basement to man a 2-1/2" line. The captain had gone to the first floor, since his radio transmission requesting the 2-1/2" line be charged with water, was not being picked up from the basement. While Barrett was alone with the line he heard firefighter Jones calling for help. He stated he found Jones who was on his knees and he helped him up and tried to get back to the stairwell. Barrett ran out of air and became disoriented himself, and, stumbling and falling, lost contact with Jones and ended up where Fitterer found him.

When it became apparent that firefighter Jones was missing, a search and rescue effort was initiated. The fire in the basement continued to increase in intensity as interior suppression efforts were made more and more difficult by rapidly escalating temperatures. Interior firefighting and rescue operations had to be abandoned before Jones was located due to the untenable conditions.

It is a standard operating procedure of the East Orange Fire Department that upon the donning of a SCBA, the positive pressure valve and the personal alert safety system (PASS) are to be turned on. No one, during the course of the investigation, has reported hearing Jones' PASS device alarm and there were attempts at silence for just that purpose during the rescue attempts. Although Jones was wearing a PASS device (all SCBA have them attached), his was not found.

The body of firefighter Edward Jones was discovered behind the stairway in the western portion of the basement by fire captain Wayne Krieger and firefighter Ronald Filand at approximately 11:00 a.m. March 5, some 21 hours after the fire was reported.

ANALYSIS

In order to comprehend the behavior of the firefighters who became disoriented and required assistance, the toxic effects of smoke must be understood. Doctor Sing of the Essex County Medical Examiner's Office reports that firefighter Jones' body contained high amounts of carbon monoxide, which apparently caused carbon monoxide narcosis.

According to David A. Purser, in his paper "The Effects of Fire Products on Escape Capability in Primates and Human Fire Victims", which was presented to the First International Symposium on Fire Safety Science in October of 1985, smoke contains narcotic and irritant gases. The effects of breathing carbon monoxide, one of the most common gases found in smoke, is that of a narcotic. When a fire victim breathes carbon monoxide "...the point is reached where normal function can no longer be maintained. Deterioration is rapid and severe, beginning with signs similar to the effects of alcohol, consisting of lethargy or euphoria with poor physical coordination, followed rapidly by unconsciousness and death if exposure continues."

CONCLUSIONS AND RECOMMENDATIONS

INSPECTIONS

The first goal of any fire department must be the prevention of fire. The most essential component of an active fire prevention program is the enforcement of the New Jersey Uniform Fire Code by local enforcing agencies. Violations of Code provisions must be abated.

Whenever any built-in fire protection equipment becomes inoperative, the agency responsible for enforcing the Fire Code within the jurisdiction must be notified. The Code contains requirements for the maintenance of such equipment at all times. If it should be concluded that restoring a sprinkler system is impractical because the building being protected is unheated, vacant, and scheduled for demolition, the enforcing agency can order alternative measures; such as, the removal of all combustible building contents.

Vacant buildings, regardless of the community or the neighborhood in which they are located, have a tendency to become attractive nuisances and must be properly secured against unauthorized entry. Once secured, such buildings must be inspected frequently to ensure that they do not become places where vagrants or neighborhood children congregate. The Uniform Fire Code contains specific provisions for the removal of the substantial hazard represented by vacant buildings.

It is recommended that all fire departments establish local enforcing agencies and enforce the Uniform Fire code provisions.

Another important component of any fire prevention program is the conduct of in-service inspections of properties within their response districts by firefighting personnel. These inspections serve several important functions, not the least of which is the removal of common fire hazards, the education of the public to fire safety needs, and the familiarization of firefighting personnel with the buildings in which they may someday have to fight a fire. A well-organized program of in-service inspections permits the development and use of pre-fire plans for major properties within a response district. Once pre-fire plans have been developed, they can be reviewed during in-house training sessions at the fire house, insuring the familiarity of all personnel with their provisions.

It is further recommended that all fire departments carry out in-service inspections of all major properties within their response districts.

The allocation of statewide resources to fire prevention efforts such as inspections remains at appallingly low levels. Less than 5% of most fire departments' budgets are allocated to this primary concern.

ACCOUNTABILITY PROCEDURES

Like many departments in the state, the Standard Operation Procedure (SOP) of the East Orange Fire Department contains provisions requiring personnel at the scene of an emergency to remain with the firefighting unit to which they have been assigned. This incident serves to reemphasize the need for such a procedure which permits accountability and control of the movement of personnel. In order to be effective, and to expect implementation of such SOP's on the fireground, all departments must train with them, enforce them and modify them when experience dictates changes are necessary.

It is recommended that accountability procedures be developed, implemented and enforced by all fire departments.

FIRE SERVICE TRAINING

Firefighters experience the highest rate of death on-the-job of any occupational group in the United States. Miners, whose occupation ranks second, experience a rate only 64% as high as firefighters.

Similarly, firefighter's occupational injury rate is one of the highest in the United States. An entry on firefighting in the Encyclopedia of Occupational Safety and Health published by the International Labor Organization states, "The extreme danger in firefighting has hazards unmatched by any other occupation."

Many firefighter injuries and deaths are preventable. The single most effective way to improve firefighter safety is through effective training. This will insure that each person operates at acceptable performance levels, reducing the number of costly injuries and tragic deaths.

The first step in developing training and education programs is to establish minimum standards for firefighter recruits, officers, and fire service instructors. This will provide the necessary tools to ensure that every member of the fire service will have the chance to acquire the basic skills and knowledge required for safe and effective service, as well as, provide an opportunity to continue to expand upon that knowledge.

The Department of Community Affairs has established, as a priority, the development of these training standards and an effective system for their implementation. These standards will be expanded to include programs for first line supervisors and senior level officers. Fire service officers must receive training, through formal educational programs, in essential subject areas if they are to be expected to safeguard personnel under their command from the hazards which are inherent, in varying ways and degrees, at the scene of any fire.

Advanced training for supervisory personnel in the use of an incident command system must be made available to all fire departments in the state. Such a system makes possible a reasoned approach to all activities on the fireground. It assures that everyone working at the scene will function smoothly as a member of the team.

In addition, at the urging of organizations representing career firefighters and fire chiefs, legislation has been introduced to mandate the training contained in these standards for the career fire service. The Department of Community Affairs supports the passage of this legislation.

FIRE GROUND COMMUNICATIONS

The ability of fireground commanders to communicate effectively with units under their command is crucial if firefighting efforts are to be successfully controlled and implemented. Radio communications are of paramount importance on the fireground in order to keep all units working at the scene immediately informed of any and all developments.

A review of the radio transcript and tape indicates a large amount of portable radio traffic was not received on the scene. It is not clear if this was a result of equipment or of environment as some firefighters reported they seemed to have better communications when radios were used above the basement.

It is recommended that the current radio equipment be surveyed to see if it performs satisfactorily under fire conditions.

PERSONAL ALERT SAFETY SYSTEMS

Personal alert safety systems must be made available to all firefighting personnel, any one of whom at an emergency scene, may become separated from others in their unit, become disoriented within unfamiliar surroundings, be physically trapped by rapid changing fireground conditions, or otherwise be rendered incapable of unaided escape. Effective rescue operations require prompt notification of their situation to commanders and effective means to determine their positions.

Such devices must be capable of sounding an adequate alarm automatically, in the event that the firefighter becomes disabled.

While these personal alarm devices are not yet among the equipment mandated by the Public Employees Occupational Safety and Health Act (PEOSHA) or regulations for personal protective equipment, they are available to all fire departments through a cooperative state purchase agreement.

FIRE FATALITIES

DATE OF OCCURANCE: 1 3 1 4 1 8 9 1 TIME OF ALARM: 1 1 1 4 : 0 1 0 1

ADDRESS: 540 Martin L. King Jr B MUNICIPALITY: E Orange 07019

MUN CODE: 1 0 1 7 1 0 1 5 1 LEA ID #: 1 0 1 7 1 0 1 5 - 0 1 0 1 1 1

FDID #: 1 0 1 7 1 0 1 5 1 0 1 FIRE DEPARTMENT: East Orange

NUMBER OF CIV FATALITIES: 1 1 1 NUMBER OF FIRE SERV FATALITIES: 1 1 1

	AGE	SEX
CASUALTY 1	<u>1 4 1 1</u>	<u>1 M 1</u>
CASUALTY 2	<u>1 1 1</u>	<u>1 1 1</u>
CASUALTY 3	<u>1 1 1</u>	<u>1 1 1</u>
CASUALTY 4	<u>1 1 1</u>	<u>1 1 1</u>
CASUALTY 5	<u>1 1 1</u>	<u>1 1 1</u>
CASUALTY 6	<u>1 1 1</u>	<u>1 1 1</u>
CASUALTY 7	<u>1 1 1</u>	<u>1 1 1</u>
CASUALTY 8	<u>1 1 1</u>	<u>1 1 1</u>
CASUALTY 9	<u>1 1 1</u>	<u>1 1 1</u>
CASUALTY 10	<u>1 1 1</u>	<u>1 1 1</u>

CAUSE OF FIRE: Undetermined CODE: 1 0 1 0 1 0 1

TYPE OF OCCUPANCY: Vacant Store CODE: 1 5 1 8 1 1 1

DETECTORS PRESENT ? YES: 1 1 1 NO: 1 X 1 OPERATED ? YES: 1 1 1 NO: 1 X 1

REPORTING AGENCY: _____ NAME: _____

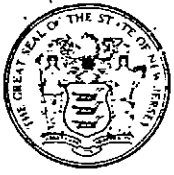
PHONE: (_____) _____ - _____ EXT _____

INVESTIGATED BY BUREAU STAFF ? YES: 1 X 1 NO: 1 1 1 NAME: Bob Horner

INCIDENT NUMBER: 1 F 1 R 1 8 1 9 1 0 1 0 1 2 1

DATE ENTERED IN SYSTEM: 1 0 3 1 0 6 1 8 9 1 ENTRY #: 1 2 1 2 1 2 1

REMARKS:



STATE OF NEW JERSEY
DEPARTMENT OF COMMUNITY AFFAIRS
DIVISION OF HOUSING AND DEVELOPMENT
BUREAU OF FIRE SAFETY
FIRE INCIDENT REPORT

(FILL IN THIS REPORT IN YOUR OWN WORDS)

F.D. Name East Orange	Weather	<input checked="" type="checkbox"/> Original
Address	Temperature	<input type="checkbox"/> Delete
City & State	Wind Direction & Speed	<input type="checkbox"/> Change

The data below is based on information available at the scene. Estimations and evaluations herein represent "most likely" and "most probable" cause & effect.

A	FDNO 07050	INCIDENT NO. 000222	EXP. NO. 00	NO. 03	DAY 06	YEAR 89	DAY OF WEEK	ALARM TIME 7 1409	ARRIVAL TIME	TIME IN SERVICE	
B	TYPE OF SITUATION FOUND Structure Fire						TYPE OF ACTION TAKEN 11 Extinguishment			MUTUAL AID 1 <input checked="" type="checkbox"/> REC'D <input type="checkbox"/> GIVEN	
C	FIXED PROPERTY USE Department Store						IGNITION FACTOR 581 Undetermined			00	
D	CORRECT ADDRESS 540 Main St., East Orange, NJ						ZIP CODE 07019		CENSUS TRACT		
E	OCCUPANT NAME (LAST, FIRST, MI) Vacant						TELEPHONE		ROOM OR APT		
F	OWNER NAME (LAST, FIRST, MI) City of East Orange, NJ						ADDRESS		TELEPHONE		
G	METHOD OF ALARM FROM PUBLIC Telephone						DISTRICT 1		SHIFT		NO. ALARMS
H	NUMBER FIRE SERVICE PERSONNEL RESPONDED 050		NUMBER ENGINES RESPONDED 007		NUMBER AERIAL APPARATUS RESPONDED 002		NUMBER OTHER VEHICLES RESPONDED 003				
I	NUMBER OF INJURIES FIRE SERVICE 000		OTHER 000		NUMBER OF FATALITIES FIRE SERVICE 001		OTHER 000				
J	COMPLEX Department Store						MOBILE PROPERTY TYPE 58 N/A			08	
K	AREA OF FIRE ORIGIN Basement Sales Floor						EQUIPMENT INVOLVED IN IGNITION 15 Unknown			00	
L	FORM OF HEAT OF IGNITION Undetermined		TYPE OF MATERIAL IGNITED 00 Undetermined		FORM OF MATERIAL IGNITED 00 Undetermined				00		
M	METHOD OF EXTINGUISHMENT Master streams						LEVEL OF FIRE ORIGIN 6 Basement		ESTIMATED LOSS (DOLLARS ONLY)		
N	NUMBER OF STORIES 6 stories						CONSTRUCTION TYPE 4 Fire resistive				
O	EXTENT OF FLAME DAMAGE Structure						EXTENT OF SMOKE DAMAGE 6 Structure				
P	DETECTOR PERFORMANCE None present						SPRINKLER PERFORMANCE 8 Sprinkler out of service				
Q	IF SMOKE SPREAD BEYOND ROOM OF ORIGIN						TYPE OF MATERIAL GENERATING MOST SMOKE Unreported		AVENUE OF SMOKE TRAVEL 00 Stairwell		
R							FORM OF MATERIAL GENERATING MOST SMOKE Unreported				
S	IF MOBILE PROPERTY		YEAR	MAKE	MODEL	SERIAL NO.					
T	IF EQUIPMENT INVOLVED IN IGNITION		YEAR	MAKE	MODEL	SERIAL NO.					
U	OFFICER IN CHARGE (NAME, POSITION, ASSIGNMENT) Robert P. Horner III						PHONE		DATE 4/11/89		
V	MEMBER MAKING REPORT (IF DIFFERENT FROM ABOVE)						PHONE		DATE		
W	FURTHER INVESTIGATION REQUIRED <input type="checkbox"/> YES <input type="checkbox"/> NO		REQUEST MADE TO		DEPARTMENT		ADDRESS				
	TELEPHONE #		DATE/TIME OF NOTIFICATION			NAME OF PERSON NOTIFIED					

COMPLETE FOR ALL INCIDENTS

COMPLETE IF CASUALTY

COMPLETE FOR ALL FIRES

COMPLETE IF STRUCTURE FIRE



STATE OF NEW JERSEY
BUREAU OF FIRE SAFETY
FIRE SERVICE CASUALTY REPORT

(Fill in this report in your own words)

FD Name
East Orange

Address _____ Zip Code _____

Phone (s) _____

DELETE

CHANGE

FA	FDID 0, 7, 0, 5, 0, 0, 0, 0, 2, 2, 2	INCIDENT NO. 0, 0, 0, 2, 2, 2	EXPOSURE NO. 0, 0	CASUALTY NO. 0, 0, 0, 1	INJURY OCCURRED MO. 0, 3	DAY 0, 6	YR. 8, 9	TIME OF INJURY
FB	CASUALTY NAME (LAST, FIRST, MI) Jones, Edward						TYPE OF CASUALTY At fire ground 2	
FC	AGE 4, 1	SEX Male	CASE SEVERITY 1	PRIMARY APPARENT SYMPTOM Died at scene 6	Asphyxiation 0, 3			
FD	PRIMARY PART OF BODY Lungs 5, 3			PATIENT TAKEN TO Morgue 4				

FE	ASSIGNMENT Suppression 1	NO. RESPONSES PRIOR TO INJURY None 9	PHYSICAL CONDITION Rested 1	STATUS BEFORE ALARM Awake 2
FF	FIRE FIGHTER ACTIVITY Ventilation 4, 3		WHERE INJURY OCCURRED Basement 5, 1	
FG	CAUSE OF FIRE FIGHTER INJURY Exposure to smoke 4, 1, 1		MEDICAL CARE PROVIDED None 1	

PROTECTIVE EQUIPMENT

FH	PROTECTIVE COAT WORN Nomex w/liner 1	STATUS Closed 4	TYPE PROBLEM None 7
FI	PROTECTIVE TROUSERS WORN Nomex w/liner 1	STATUS Proper 1	TYPE PROBLEM None 7
FJ	BOOTS/SHOES WORN Boots w/steel toe 1	STATUS Worn 3	TYPE PROBLEM 8
FK	HELMET WORN Polycarbonate 4	STATUS Removed 8	TYPE PROBLEM Knocked off 5
FL	FACE PROTECTION WORN Partial 2		TYPE PROBLEM Not classified 9
FM	BREATHING APPARATUS WORN Pressure SCBA 2	STATUS Removed face piece 3	TYPE PROBLEM Unreported 0, 0
FN	GLOVES WORN Unreported 0		TYPE PROBLEM Unreported 0
FO	SPECIAL EQUIPMENT WORN Unreported 0	STATUS Unreported 0	TYPE PROBLEM Unreported 0

FP	MEMBER MAKING REPORT	DATE	OFFICER IN CHARGE (NAME, POSITION, ASSIGNMENT)	DATE
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REMARKS

REMARKS CONTINUED ON REVERSE SIDE