DISTRICT OF COLUMBIA
FIRE AND EMS DEPARTMENT

COMMAND SAFETY

Presented By: Dennis L. Rubin, *Chief*

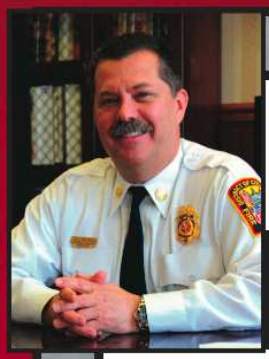
COURSE DESCRIPTION

A GREAT CHANCE TO TRAIN

The Wetumpka Fire & Rescue Department is please to be able to host a great opportunity to train for volunteer and career firefighter through-out the great State of Alabama. Fire Chief Dennis L. Rubin of the District of Columbia Fire & EMS Department and formally from Dothan Fire & Rescue Department will be making a presentation that all fire and rescue department members will benefit from attending. Chief Rubin has developed a unique Leadership Program based on his 35 years of Fire – Rescue experience.

This training day will focus on a program that Rubin calls "Command Safety". The Chief will discuss the action, behaviors and conditions that should be considered all of the time to prevent accident and injury of all firefighters. With more than 110 members dying in the line-of-duty each year in this Nation, this program is a must see for all. Rubin will use a combination of straight forward lecture and interaction along with case study materials to get his points across. If you are interested in becoming a better volunteer or career firefighter, you will want to see Chief Rubin's latest program.

ABOUT THE INSTRUCTOR



DISTRICT OF COLUMBIA
FIRE AND EMS DEPARTMENT

DENNIS L. RUBIN, CHIEF

On April 16, 2007, Mayor Adrian M. Fenty appointed Dennis L. Rubin Chief of the District of Columbia Fire and Emergency Medical Services Department – the same Department Rubin joined as a line firefighter at the age of 21. Rubin commands a staff of over 2,200 sworn and civilian employees and manages an annual operating budget in excess of $200 million. The Department he leads is responsible for protecting more than 1.3 million people who visit, work, and live in the Nation's Capital each day as well as safeguarding our precious national landmarks from the U.S. Capitol to the White House. Prior to his nomination, Rubin was the Fire Chief of the Atlanta Fire and Rescue Department.

Chief Rubin's experience in fire and rescue service spans more than 35 years. He has served as a company grade officer, command level officer, and Chief in other cities including Chesterfield and Norfolk, Virginia and Dothan, Alabama. In 1994, he served as the President of the State Fire Chiefs Association of Virginia. Rubin was the host Fire Chief for the 1999 Southeastern Fire Chiefs Association conference held in Dothan, Alabama. He serves on several committees with the International Association of Fire Chiefs, including a two-year term as the Health and Safety Committee Chair. Chief Rubin was the host Fire Chief for the "Wingspread IV and V" conferences held in 1996 and 2006.

Chief Rubin's educational accomplishments include a Bachelor of Science Degree in Fire Administration from the University of Maryland and an Associates in Applied Science Degree in Fire Science Management from the Northern Virginia Community College. He is a 1993 graduate of the National Fire Academy's Executive Fire Officers Program (EFOP). Rubin is a Certified Emergency Manager (CEM) and has obtained the Chief Fire Officer Designation (CFOD) and Chief Medical Officer Designation (CMO) presented by the Center for Public Safety Excellence.

Rubin's teaching credentials are significant. They include a field instructorship with the University of Maryland Fire & Rescue Institute and Associate Instructorships with the Virginia Commonwealth University in Richmond, Virginia and Rio Salado Community College in Mesa, Arizona. Rubin has been an adjunct faculty member of the National Fire Academy since 1983. At the National Fire Academy he instructed, as well as developed, many courses. Rubin is also a popular speaker and lecturer at the local, state, national and international levels.

Rubin is the author of a full-length book entitled Rube's Rules for Survival that is available through Penn Well Publishing. He is also a long-standing contributing editor of FIREHOUSE Magazine, and has written more than 140 technical articles related to fire department operations, administration, training, and safety.

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COURSE OUTLINE AND NOTE TAKING GUIDE


DISTRICT OF COLUMBIA
FIRE AND EMS DEPARTMENT
COMMAND
SAFETY
PRESENTED BY: DENNIS L. RUBIN, CHIEF
WELCOME


DISTRICT OF COLUMBIA FIRE AND EMS DEPARTMENT
COMMAND SAFETY
LEARNING OBJECTIVE ONE
Responsibility of a
Fire • Rescue Officer
is…
THE SAFETY OF
HIS/HER MEMBERS.


DISTRICT OF COLUMBIA FIRE AND EMS DEPARTMENT
COMMAND SAFETY
LEARNING OBJECTIVE TWO
Must have a risk
management process that…
BALANCES MEMBER SAFETY
VS CUSTOMER NEEDS.

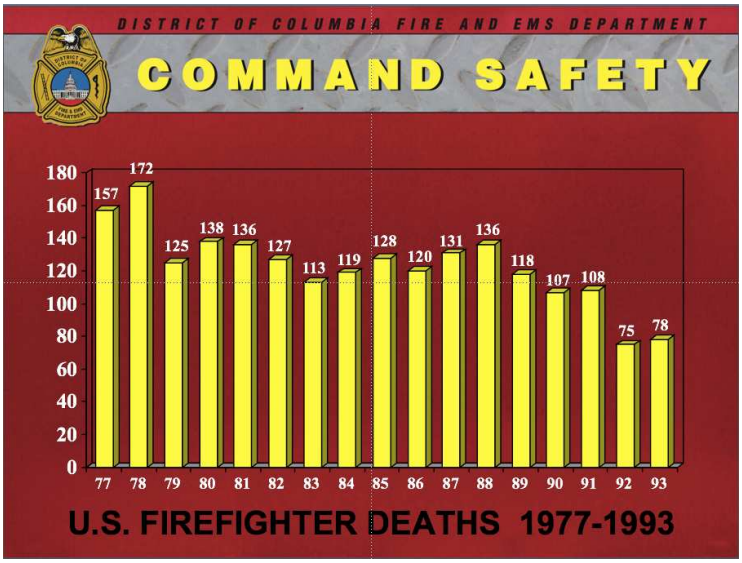
DISTRICT OF COLUMBIA FIRE AND EMS DEPARTMENT

COMMAND SAFETY

FIREFIGHTING IS ONE OF AMERICA'S MOST DANGEROUS LABOR OCCUPATION.

DISTRICT OF COLUMBIA FIRE AND EMS DEPARTMENT

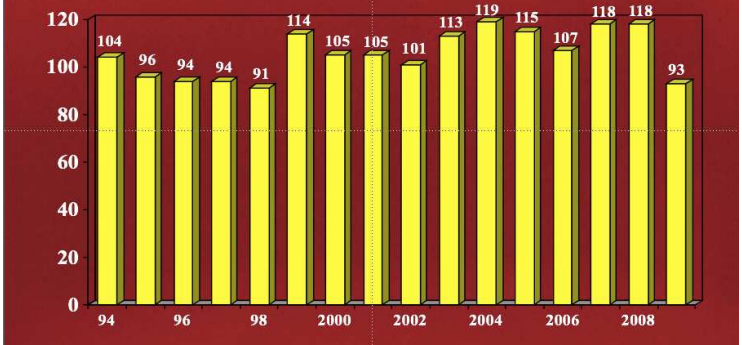
COMMAND SAFETY



U.S. FIREFIGHTER DEATHS 1977-1993

DISTRICT OF COLUMBIA FIRE AND EMS DEPARTMENT

COMMAND SAFETY



U.S. FIREFIGHTER DEATHS 1994-2009

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COMMAND SAFETY

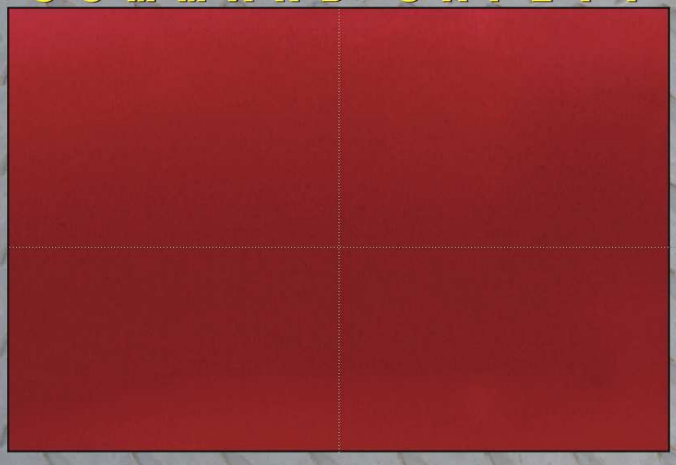
Approximately 100 American Firefighters die in the Line of Duty each year.

DISTRICT OF COLUMBIA FIRE AND EMS DEPARTMENT

COMMAND SAFETY

28% of Firefighters are killed responding to, returning from and on the street at alarms.

COMMAND SAFETY



VIDEO: RUSHING TO THE RESCUE

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COMMAND SAFETY

REMEMBER TO…

- Stop at red lights and stop signs
- Go slower rather than faster
- All members wear seat belts all of the time
- Conduct driver training
- Driver's background checks.

COMMAND SAFETY

VIDEO: STATE TROOPER TRAFFIC STOP

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COMMAND SAFETY

STREET OPERATIONS

- **LIMIT THE EXPOSURE**
  1. Minimum Apparatus & Personnel
  2. Limit crews on scene to only those necessary
- **LIMIT THE TIME ON SCENE**
  1. Clear-up crews as soon as possible.

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COMMAND SAFETY

MATCH CREW SIZE TO OBJECTIVES

DISTRICT OF COLUMBIA FIRE AND EMS DEPARTMENT

COMMAND SAFETY

STREET OPERATIONS

- Need for advance warning to slow passing traffic
  1. Arrow Boards, Flares, Cones, Police Cars, DOT signage
  2. Variable Message Signs, News Media / Traffic Reports
- Apparatus Positioning and Arrangement
  1. Guard the scene, guard the crew
  2. Park apparatus at an angle.

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COMMAND SAFETY

EARLY WARNING

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COMMAND SAFETY

STREET OPERATIONS

- **Work on side away from traffic**
  1. Pump Operators, Location of equipment
  2. Look! Before disembarking apparatus
- **Shut Down the Roadway**
  1. Not Popular with Law Enforcement or the Public
  2. May be Necessary ! - Plan for it in advance.

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COMMAND SAFETY

CURBSIDE WHEN POSSIBLE

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COMMAND SAFETY

STREET OPERATIONS

- **Scene Lighting**
  1. Reduce emergency lights, Use “Blocking” mode, Sign Boards, Arrow Boards, Arrow Sticks
  2. Increase use of amber lenses (more apt to slow traffic)
  3. Provide scene illumination after dark
  4. Presence of Police vehicles shown to slow traffic.

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COMMAND SAFETY

USE PROPER SCENE LIGHTING

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STREET OPERATIONS

- **Require Retro-reflective or Florescent Clothing / PPE**

1. Structural gear may not offer "high visibility"
2. Safety Vests - Get them & Use Them
3. Ansi 107-1999 High Visibility Safety Apparel
   - Class I - Traffic <25 mph, separation from traffic
   - Class II - Traffic >25 mph, inclement weather, directing traffic
   - Class III - Traffic >50 mph, emergency responders
4. Co. Officers monitor & enforce their usage
5. Safety Officer carry spares
6. Vests on apparatus? Assigned to each person?

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COMMAND SAFETY

ALWAYS WEAR TRAFFIC VESTS

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COMMAND SAFETY

STREET OPERATIONS

- **Personal Protective Equipment**
  1. Use of helmets and turnouts prevented more serious injuries at the incident
- **Design safety features into all new apparatus**
  1. Use of better reflective markings on rear of apparatus
  2. Space for storage of traffic control equipment
  3. Design lighting to protect the incident scene.

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COMMAND SAFETY

MATCH PPE LEVEL TO RISK

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STREET OPERATIONS

- **Safety Officer assigned for scene safety**
  1. Scene hazards and traffic control
- **Accountability System in Place on ALL Incidents**
  1. Ability to account for all personnel on scene
  2. Could you identify if any of your crew were under a vehicle that intruded on your scene?

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COMMAND SAFETY

ACCOUNTABILITY
- Critical -

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COMMAND SAFETY

ACCOUNTABILITY QUESTIONS

- Who
- Where
- What Are They Doing
- What Are The Conditions?

COMMAND SAFETY

VIDEO: CHAPEL STREET FIRE

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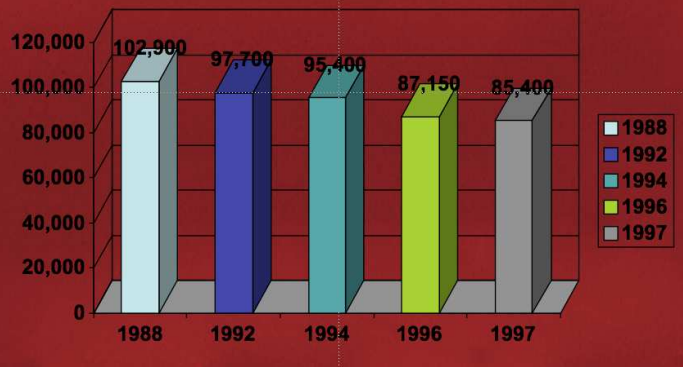
COMMAND SAFETY

FIRE FIGHTER DUTY INJURIES



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Approximately 100,000 American Firefighters Receive a reportable injury each year.

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COMMAND SAFETY

25% of firefighters are injured during training evolutions.

COMMAND SAFETY

VIDEO: FIRE TRAINING MISHAP

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COMMAND SAFETY

FIREFIGHTER DEATH AND INJURY DATA IS COLLECTED BY NFPA

Funded by a Grant From USFA.

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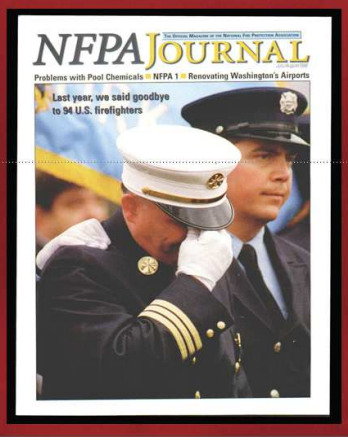
COMMAND SAFETY

NFPA INDICATES THAT FIREFIGHTER INJURIES ARE *UNDER* REPORTED.

DISTRICT OF COLUMBIA FIRE AND EMS DEPARTMENT

COMMAND SAFETY

NFPA Publishes the results of the **Firefighter Death and Injury Survey** in Spring and Fall issues of Fire Journal Magazine.



DISTRICT OF COLUMBIA FIRE AND EMS DEPARTMENT

COMMAND SAFETY

COMPARE OUR RESULTS WITH PRIVATE INDUSTRY

100 Firefighter Deaths
85,000 Firefighter Injuries

What's Wrong With This Picture?

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COMMAND SAFETY

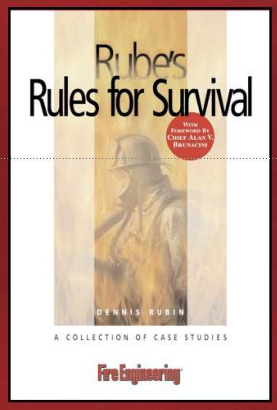
So, if firefighter safety is our most important value, we should give this issue more than just "***LIP SERVICE***?"

DISTRICT OF COLUMBIA FIRE AND EMS DEPARTMENT

COMMAND SAFETY

IF YOU DON'T BELIEVE ME …

READ MY BOOK !!



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COMMAND SAFETY

THE FOUNDATION OF INCIDENT SAFETY *MUST* BE RISK MANAGEMENT

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RISK MANAGEMENT

CONTINUOUSLY EVALUATES THE HUMAN RISK (FIREFIGHTER LIVES) VS THE BENEFITS TO BE GAINED.

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COMMAND SAFETY

RISK MANAGEMENT

OR

RISK BENEFITS

ANALYSIS LOOKS LIKE…

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COMMAND SAFETY

We are willing to

"RISK A LOT TO SAVE A LOT"

Typically -
To Save Life

DISTRICT OF COLUMBIA FIRE AND EMS DEPARTMENT

COMMAND SAFETY

We are willing to

"RISK A LITTLE TO SAVE A LITTLE"

Typically -
To Save Property


DISTRICT OF COLUMBIA FIRE AND EMS DEPARTMENT
COMMAND SAFETY
We will take
NO RISK
FOR NO BENEFIT
Typically -
Defensive Operations


DISTRICT OF COLUMBIA FIRE AND EMS DEPARTMENT
COMMAND SAFETY
We will always choose
LIFE OVER
PROPERTY
(Firefighters and
Customers)


DISTRICT OF COLUMBIA FIRE AND EMS DEPARTMENT
COMMAND SAFETY
We will always operate
in a highly calculated
manner as a part of our
Risk Management Plan
(Policies, Procedures
and Training)

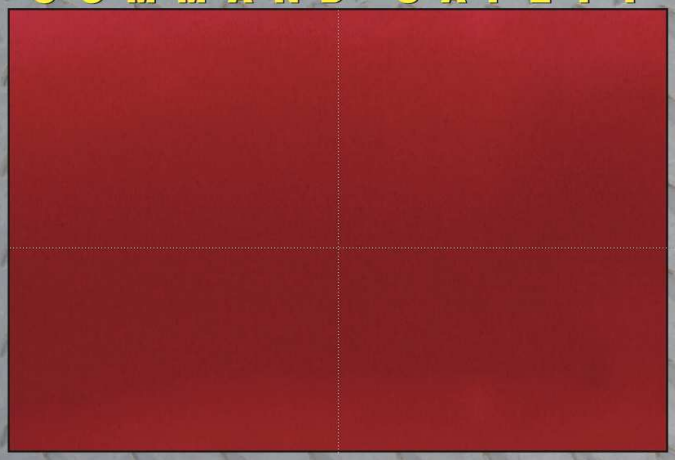
DISTRICT OF COLUMBIA FIRE AND EMS DEPARTMENT

COMMAND SAFETY

We will always operate in a highly controlled manner as a part or our **Risk Management Plan**

(Strong ICS)

COMMAND SAFETY



VIDEO: HOUSE FIRE

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COMMAND SAFETY

ESTIMATED OUTCOMES

- Early into the incident, the Commander should be able to estimate the results of our efforts

Example - New Chinese Restaurant.

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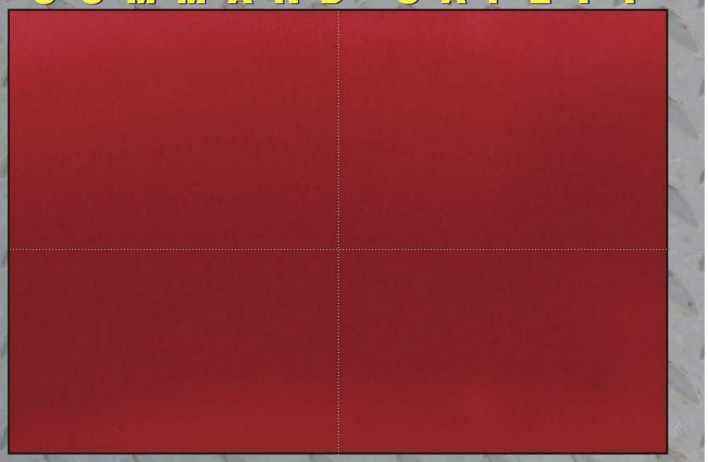
Almost all firefighter Injuries and Fatalities are Highly Predictable events

COMMAND SAFETY



VIDEO: WAREHOUSE COLLAPSE

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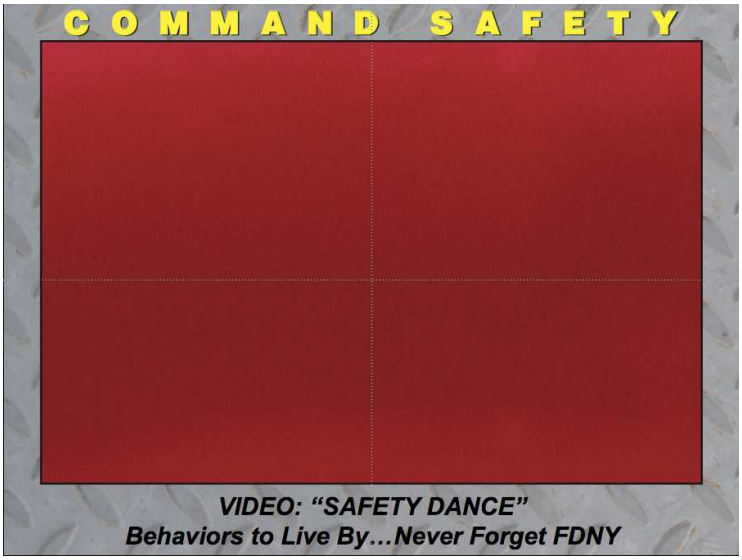
COMMAND SAFETY

If these events are

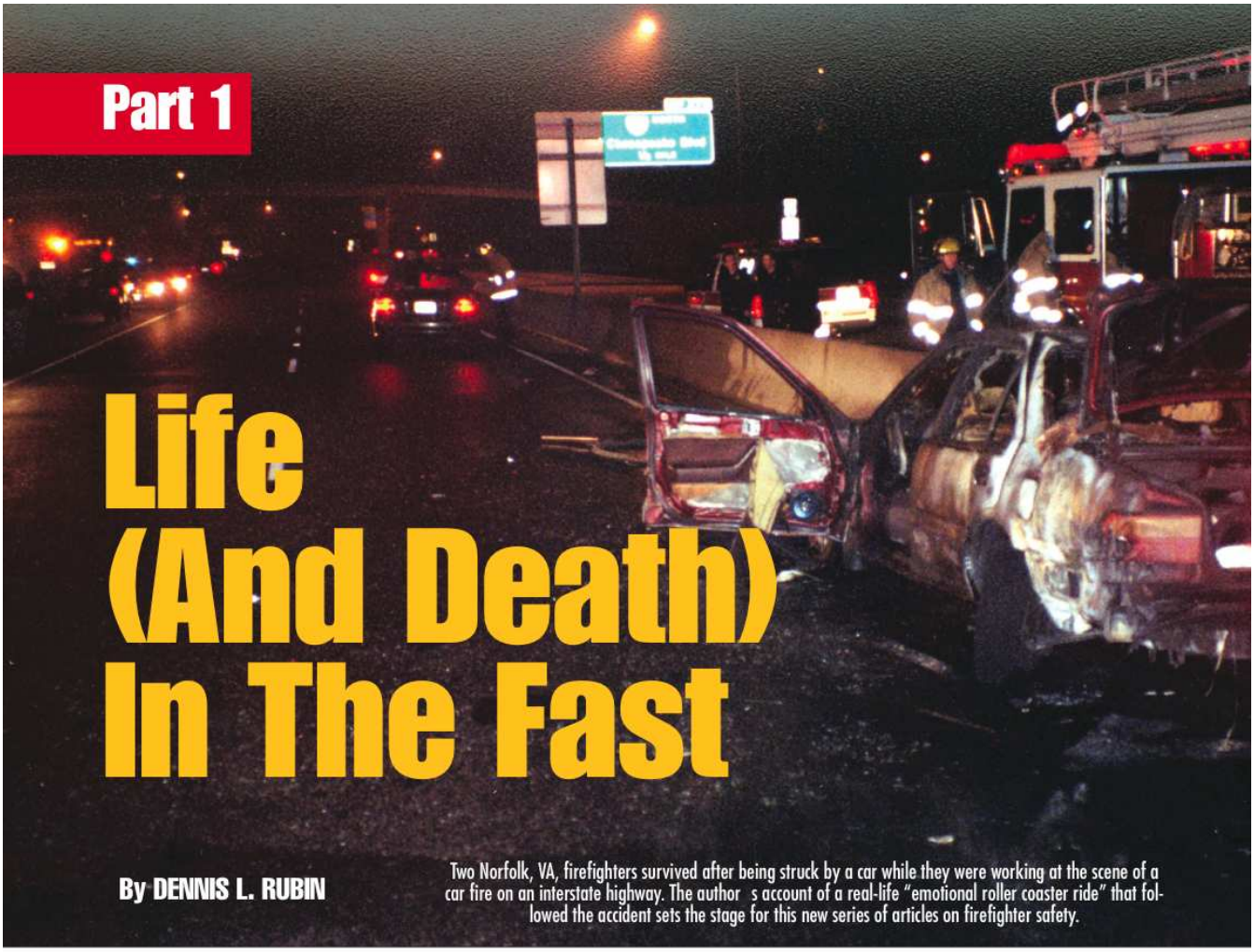
HIGHLY PREDICTABLE

they are

HIGHLY PREVENTABLE!


COMMAND SAFETY
VIDEO: "SAFETY DANCE"
Behaviors to Live By…Never Forget FDNY

SUGGESTED READINGS



Part 1

Life (And Death) In The Fast

By DENNIS L. RUBIN

Two Norfolk, VA, firefighters survived after being struck by a car while they were working at the scene of a car fire on an interstate highway. The author s account of a real-life "emotional roller coaster ride" that followed the accident sets the stage for this new series of articles on firefighter safety.

At 2:29 A.M. on March 13, 2001, my home telephone rang at the same time the shrill tone of the pager urged my attention. What was so important that both electronic devices had to be used to get the fire chief out of bed?

I had no doubt that something big (major incident of some type) was brewing. In the previous seven years, I could not recall having this one-two punch hit me in the middle of sleep hours; it was a little like being back on shift. The dispatcher on the telephone was professional in tone and very much to the point. "Fire 1!" (the department's radio designation for the chief). "Yes," I responded to her voice. The dispatcher continued, "Two firefighters have been struck on Interstate 64 and they have been trauma alerted to the hospital."

The pager message seemed to want to confirm what the voice just told me and I tried not to believe either messenger. The digital words confirmed what could become the chief's worst nightmare and fear. The words were undeniable and haunting – "Two members struck by an auto on I-64. They are enroute to Norfolk General at this time." As I was rapidly getting dressed to report to the emergency room, the phone rang for a second time that hectic early morning. This time the voice on the other end of the line was familiar, but was just as blunt as the first person who had called minutes earlier.

One of the on-duty battalion fire chiefs, Marsha Hawkins, was calling me to make sure that I got the very important news and to provide me with an update of the status of our two members. She told me that Firefighter Nick Nelson was in critical condition and may not survive the hour. The other member, Firefighter Milton Odem, was banged up a bit, but would be just fine after a short recovery period.

As my heart was pounding through my chest, I responded to the hospital. It seemed like an eternity before I arrived there to be with my wounded firefighter and brother Nick Nelson. For the past two days, he had attended a command safety seminar at the Fire Training Center with me. Nelson was an excellent firefighter and good (same hometown) friends with one of my aides, Lieutenant (now Captain) John DiBacco (see page 115). Losing him would be extra difficult to deal with for the department and me.

AT THE HOSPITAL

The scenes in the ER were just what I expected for a trauma alert situation that I have come to know all to well in my 31 years of service. I could only describe the trauma treatment area as organized chaos or perhaps emergency medical poetry to the trained eye. About a dozen of Tide-

Dennis L. Rubin, a Firehouse® contributing editor, is chief of the Atlanta Fire Rescue. Previously, he was city manager and public safety director for the City of Dothan, AL. Rubin is a 33-year fire-rescue veteran, serving in many capacities and with several departments. He holds an associate's degree in fire science from Northern Virginia Community College and a bachelor's degree in fire science from the University of Maryland, and is enrolled in the Oklahoma State University Graduate School Fire Administration Program. Rubin is a 1993 graduate of the National Fire Academy's Executive Fire Officer Program and holds the national Certified Emergency Manager (CEM) certification and the Chief Fire Officer Designation (CFOD) from the International Association of Fire Chiefs (IAFC). He serves on several IAFC committees, including a two-year term as the Health and Safety Committee chair. Rubin can be reached at Firerube@aol.com.


Courtesy of Norfolk Fire-Rescue

water Virginia's best doctors and nurses were attending to and surrounding Nelson when I walked into the treatment bay.

My thoughts wandered into what actions I needed to take right away to be of best help to my critically injured warrior. My first thoughts were to start notifications of his family, to make sure that our union president and our governing body were aware of this tragic situation. I remembered that a lot of work had to be completed to protect Nelson's public safety officer death benefits to ensure that his family would be taken care of financially. It was difficult to believe that our department was going to lose an outstanding young member in the line of duty in such a needless way, while I was at the helm. Simply heartbreaking, maybe this was just a nightmare (a very bad dream)!

As I fought my way up to his bedside to say goodbye to a fellow firefighter that I had just met at a command conference, my chest grew tight and breathing became difficult. When I jockeyed into position for an unobstructed view, I realized that he was not on a ventilator (which I was sure that had to be in place by now). That was a surprise. Next, I noticed that he was moving his legs and my thoughts changed just a little; maybe there was a glimpse of hope for him to make it through this tragedy.

When I placed my hand on the top of his right shoulder, he looked at me and spoke. I can still remember his exact words. He said, "Chief, if anyone ever tells you that a really bad hangover is just like being run over by a car, you can tell them that they are full of –!" I don't think that I have ever been happier to hear a firefighter complain to me. Based on the treatment (or lack of), Nelson's presentation and good humor, I knew that everything was going to work out for us.

I wanted to open this article with the real-life "emotional roller coaster ride" that I experienced while I was chief of the Norfolk Fire-Rescue so that I can express and underline the importance of the topic that this series of articles will address. My hope is that no other fire chief ever needs to take this very stressful "ride" by implementing the guidelines that will be discussed.

When we deliver our services out on the street, we often lose sight of the dangers that lurk out there for us all of the time. About 30% of all firefighter line-of-duty deaths (LODDs) happen while responding to or returning from alarms. Included in this high percentage of LODDs are the members who are killed while working in the street, such as in the opening case study that you have just read. Considering the sheer number of these needless and preventable accidents and the general severity of them as well, the time is now to take action and make organizational changes that will keep our brothers and sisters safe when they go to work in proximity of vehicular traffic, regardless of the road size or speed limit.

In the first part of this two-part series, I will discuss the details of the Norfolk, VA, case study in detail so that we may learn from the miscues that were made that morning. Then, in part two, the procedural steps that departments must take will be clearly outlined to provide a framework for some departments to develop and implement a highway safety program and for other departments to perhaps update and tune up their existing procedures.

THE 4 CAUSES OF ACCIDENTS

By way of a quick review, essentially there are four broad categories that identify how firefighter injuries and fatalities occur. Therefore, the same information can be used to prevent accidents from happening in the first place. Most firefighter injuries and fatalities are highly predictable events and therefore can be prevented. The case study that I will review in this article unfortunately falls into this category.

The four root causes of firefighter accidents and injuries are:

1. Engineering controls
2. Administrative controls
3. Environmental conditions
4. Human factors – performance

By carefully examining each of these four factors, a clearcut determination of most accidents can be identified. Proper and correct identification of accidents will provide departments with perhaps the best tools to prevent reoccurrence of the same situations as well as hold the keys to avoiding new mistakes. Much too often, departments tend to make the same mistakes on a repeated basis without ever learning, or wondering for that matter, how to prevent the behaviors/actions in the first place.

The information that is gained by a formal departmental review will provide a detailed guide for change to prevent reoccurrences of the same or similar mistakes. The accident report should indicate what policies (administrative controls) were broken, or which polices need to be changed or updated. There should be a way for the report to discuss what policies are nonexistent and need to be developed. There should be open and frank discussions about training policies (administrative controls and human factors) of the department and what needs were not being met that allowed the accident to happen. Included in the analysis should be a review of the human factors (both decisions and actions) as a part of the recovery process. Finally, there should be a section that covers all mechanical equipment involved (engineering factors).

OPERATING AT THIS ALARM

Now back to the operations on Interstate 64. Engine 14 was out the door and underway in less than a minute. The 14's are one of Norfolk's busiest engine companies and the minimum crew of four members was aboard on that shift. Within the fourth minute after the initial car fire dispatch, the lieutenant was reporting on location with fire under the hood of a car.

The vehicle fire just happened to have occurred about a mile from Fire Station 14's quarters. The dispatcher indicated that the car was located in the HOV (high-occupancy vehicle) lane of the interstate. This fact played a major part in the action that leads up to the firefighters being struck by an oncoming vehicle.

The weather conditions that early morning were difficult at best. A heavy downpour of rain hours before had caused a moderate fog condition. Smoke from the fire laid down at the street level and coupled with the fog caused a great deal of reduced visibility. In fact, the engine operator, Firefighter David Phelps, described the fact that he proceeded past the burning car at about 5 mph because of the very low level of visibility just downwind of the well-involved car.

Engine 14 took a position in the regular (not HOV) westbound lane a few feet past the burning vehicle on the opposite side of a permanently installed concrete "Jersey barrier." After a brief size-up, the company commander, Lieutenant Mike O'Neill, ordered a fire attack with a 1¾-inch preconnected handline. In order to conduct the requested fire attack, the "jump seat" firefighters had to hop over the "Jersey barrier." This perhaps was the last critical decision that was flawed and would be a major factor in the cause of this accident.

Nelson was on the nozzle and started a direct attack on the fire under the hood by directing the stream into the left wheel well of the car. This action had Nelson out into the active lane by about six to eight feet – perhaps the worst place to be

This is the scene of the motor vehicle accident in which two Norfolk, VA, firefighters were injured. According to the author, the four root causes of firefighter accidents and injuries are engineering controls, administrative controls, environmental conditions and human factors (i.e., performance).

on a 55-mph interstate on a very low visibility night. At the same time, Odem was attempting to open the hood of the car to allow unobstructed access to the engine fire. The lieutenant was at the center of the hood to complete the opening process once the release latch was engaged to finish the extinguishment task at hand. By sheer luck, the lieutenant had the only protected position of the three attacking members working at the alarm that morning.

Without warning, another car smashed into the left rear side of the burning car. Now out of control, the striking vehicle continued down the side of the burning car, delivering a glancing blow to Odem. Perhaps he was able to dive into the passenger compartment for protection from the ensuing impact. He was not able to explain what had happen to him at that exact time; simply put, he could not recall this action when asked.

Nelson was not so lucky. He took a direct hit from a car traveling at least 50 mph. He was wearing full personal protective equipment as he was lifted up onto the top of the fender and carried about 50 feet down the highway. Being a highly trained firefighter, Nelson never let go of the nozzle and was pulled off of the car when the line pulled tight. It was at this point that the car ran over both of his legs at the knee. Tire marks were left on his turnout pants and can be prominently seen today.

Once the commotion was over, all three members rushed to Nelson's assistance. O'Neill called into the Communications Center for additional assistance. O'Neill asked for an ambulance for Nelson and a second engine and battalion chief for the fire and accident investigation. As the three members were applying advanced life support care for the injured member, the unthinkable occurred. Yet another vehicle, this time a pickup truck, struck the burning car. By now, the fire was completely consuming the original vehicle, underlining the poor visibility to the oncoming traffic. The pickup pulled off of the road and came to a stop in the breakdown lane behind the car that had struck Nelson. Now the members had to check on the wellbeing of the pickup's driver by going back onto the interstate, which seems to get riskier by the minute.

At about this time, reinforcements began to arrive. The Virginia State Police blocked the travel lane behind the burning car. The ambulance (Rescue 14) arrived in a few minutes to transport Nelson; Engine 9 and Battalion 3 arrived to help stabilize the car fire situation. The 9's were able to quickly extinguish the fully involved car while many more assets arrive to help close down the entire HOV roadway. With the traffic managed properly, the incident was fairly simple to handle and bring under control.

AFTERMATH OF THE INJURIES

Nelson was admitted into the hospital for treatment. In fact, he took up residence there for the next few weeks. He was diagnosed with a broken pelvic bone and severely sprained knee ligaments. His doctors (along with the fire chief) were amazed by the moderate nature of the human damage from such a horrible mechanism of injury. Within six weeks, he began to show up at the station before and after physical therapy.

Nelson returned to duty a few months later, to an outpouring of support by the community. In fact, the State Secretary of Public Safety, John Marshall, traveled from Richmond to visit him in the hospital. Considering that this had never happen before, it was quite an impressive visit by a state cabinet member.

The close to Nelson's story took an unexpected twist a few months after his reported complete recovery. The only explanation must have been some sort of head trauma that was not detected by the hospital. Firefighter Nick Nelson has become Officer Nick Nelson – he left the fire service to pursue policing as a career.

Odem was treated and released from the hospital the same morning. After just six or so shifts, he was fully recovered and back to full duty. As part of the recovery process, a detailed training package was developed by O'Neill and presented personally to all of the operating troops in hopes of preventing any reoccurrences of this near disaster. Also, the department was making several major changes to improve the safety of the members that must operate out on the street everyday. Each of those items will be covered as a separate topic in part two of "Life (and Death) in the Fast Lane."

Until next time, be safe out there!

Part 2

By DENNIS L. RUBIN

Life (And Death) In The Fast Lane

Plano Fire Department

This Plano, TX, Fire Department pumper has reflective tape and paint enhancements for all weather and lighting visibility.

Preventing Harm

The worst day that a fire chief can have is when a member gets harmed. Our business is often referred to as a brother/sisterhood; therefore, an injury to one translates into damage to all. Chief officers – nope, make that all officers and members – must prevent avoidable harm to everyone who pins on the badge (actually everyone and everything).

During my first seven years as a fire chief with two great agencies, I had a few close calls. One incident that has been impossible to forget involved two firefighters being struck by an automobile on Interstate 64 in Norfolk, VA. Part one of this series (March 2003) described the accident, the emotions and the damage that a vehicle traveling 50 mph can do to a healthy young firefighter. This segment will take an in-depth look at our four input factors to best determine ways to prevent similar highway accidents from occurring when we are performing our duties in the street.

By way of a brief review, Firefighter Nick Nelson and the other three members of Engine 14 "A" shift responded to a report of an automobile on fire on Interstate 64 at the Norview exit. It was 2:21 A.M. on March 13, 2002, when this disaster began to unfold. Within minutes after dispatch, Engine 14 reported on location with a working auto fire on the interstate. After a tactical size-up, our members began stretching a 1¾-handline to attack the engine compartment fire. Nelson positioned his hoseline at the left front wheel well to start fire attack while the other firefighters entered the passenger compartment to unlatch the hood-release mechanism. By all indications, the plan, at first, seemed to be working well and the vehicle fire would be rapidly contained and extinguished.

Without warning, a vehicle traveling past the burning car struck Nelson at an estimated speed of 50 mph. Just before the car smashed into Nelson, the firefighter who was attempting to pull the

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hood-latch release lever received a glancing blow from the same car, brushing him into the passenger compartment and out of harm's way. Nelson, however, was lifted up on the hood of the passing vehicle and carried about 50 feet from point of impact.

The ever-diligent firefighter, Nelson hung onto the attack line during this wild ride. Once the hoseline was stretched out tight, he was pulled from the car's hood. It is at this point that he received the worst of the injuries as the car ran over the backs of both of his legs. The indelible tire marks on his turn out gear are a depressing and tangible reminder of this event.

When the accident was investigated, several "lessons learned or reinforced" surfaced very early into the review. The "links" in the safety-and-survival chain were breaking all around Nelson, and this allowed his injuries to occur. The contributing factors ranged from the previous evening's rain causing fog and low (poor) ground visibility, to Nelson being in an active traffic lane without barrier protection, to no warning signals for oncoming drivers. Noteworthy was that a second vehicle crashed into the still-burning car, almost striking all four members of Engine 14 as the balance of the crew provided aide to their injured brother. We were lucky that night.

As the situation concluded, one member (Firefighter Milton Odem) was treated and released within hours and Nelson, after a long hospital stay and rehabilitation process, returned to full duty. (I do worry about him though; soon after his return to full-duty status was achieved, he left the fire department to pursue a police career. Go figure.) The accident has cemented a lifetime bond between Nick Nelson and me. By now, you have realized that part two will be taking an in-depth look at how to prevent the chief's worst nightmare.

Firefighter injury and fatality statistics indicate that nearly 30% of all line-of-duty deaths occur while we are responding to, returning from and working in the street at alarms. This horrible statistic seems to remain constant from year to year, indicating that we (fire service leaders) are doing very little about this looming problem. Research has been conducted producing "Best Practice" behaviors and programs, but there does not appear to be a rush to implement even the simplest of controls to lessen the impact of this problem.

Right after the Norfolk interstate accident, the International Association of Fire Chiefs (IAFC) conducted a video training teleconference. Many attended and participated, but most departments did not take advantage of this great opportunity. Further, the U.S. Fire Administration produced an excellent "white paper" on the topic, but I would submit that most department leaders are unaware of this invaluable, no-cost federal resource. (Knowing that Firehouse® readers are among the best and brightest in the business, I hope that this writing will help most departments work safely in the streets. And while I am "soap boxing," you can meet now-Police Officer Nick Nelson and see his turnout pants – with tire marks – at the July 2003 Firehouse Expo in Baltimore.)

Before I leave the background section, I want to report that police agencies incur about 50% of their line-of-duty deaths responding to, returning from and operating out in the streets. Perhaps both fire and police agencies need to work on this critical area of improvement together. With Nick becoming a cop and my namesake (Dennis, II) working for the U.S. Secret Service, I felt a fatherly need to get the PD plug in as well. Think about it, a speeding auto on the street should/must fall into the IDLH category – immediately dangerous to life and health.

ACCIDENT CAUSES

Perhaps the best way to discuss "best practice" guidelines is to use the four categories that actually cause accidents. The four major causes of accidents are:

1. Engineering controls
2. Administrative controls
3. Environmental conditions
4. Human action and performance

Accident investigators are usually able to identify one or more of these factors as the direct cause of accidents. In most cases a series of factor failures will precede a negative consequence (firefighter death or injury). A recent LODD review of 50 fatalities revealed that the fewest number of factors that occurred prior to the mortal firefighter injury was four. The average number of factors involved in these 50 untimely deaths was seven. Finally, some cases took 11 "links" of the safety chain to fail before the members lost their lives.

Incidents involving a single causative factor do happen, but they are rare. An example of a single factor (not necessarily ending in disaster) might be a firefighter failing to wear a seatbelt when the vehicle is underway. Just because a poor behavior (actually stupid) was applied, it does not necessarily spell out death or even injury. However, when the rig gets intimate with Mr. Telephone Pole, the poorly behaved and trained member could become a statistic, even though the injury could have been easily prevented by clicking the seatbelt.

ENGINEERING CONTROLS

Engineering controls deal with design and maintenance of all of the mechanical items. An example of an engineering control would be the application of an anti-lock brake system. By design, ABS will not allow a wheel to "lock-up," but will rhythmically impulse to slow and slightly rotate the tire to prevent the loss of steering control.

There are many engineering controls that must be included at every alarm to avoid accidents and injuries. Once the apparatus is properly spotted and tactically placed (a very big deal), the drive wheels must be chocked. The driver should be assigned this duty and the chocks are now being stored (by design) near the rear wheels for very easy and rapid application.

Next, don't get off of the truck without a reflective turnout coat or traffic vest. The fire-rescue service has the neatest dark-blue T-shirts in existence. However, when these are coupled with dark-blue pants or shorts, we become nearly invisible to the motoring public who are focusing on the overturned car or the smoke-covered Cape Cod. Wear reflective outer garments on every call, not just the ones unfolding out in the street. If your department always follows this rule, this safety behavior will become second nature and a habit (which chiefs will love). Perhaps one of the best incident safety officers that I have ever met, Chief Donald Grant of Norfolk, visualized a time in the future when the entire turnout gear ensemble would be reflective. I think Grant may be on to something with this idea.

The next engineer control factor is to set up traffic cones all around your apparatus every time it is parked anywhere outside of the fire station bay. Cones are being carried on the front, side and rear running boards, making this task simple. Having the cones in such an obvious location serves as an ever-present reminder to establish your "force field" all around the truck.

Along with the cones, fire-rescue apparatus must have plenty of reflective striping and proper lighting. Most manufacturers offer a wide variety of lighting packages. Of course, National Fire Protection Association (NFPA) Standard 1901 must be followed as a minimum, but the amber light directional sticks are gaining popularity as a safety option. Simply put, add the lights and reflective tape that will cause you to be noticed by oncoming traffic the earliest. The photo on page 88 was provided by Chief Bill Peterson of the Plano, TX, Fire Department. Plano's rigs are highly visible when they are out on the street, regardless of the lighting.

A major factor in protecting our most precious resource, our members, is to provide and maintain physical barriers between the firefighters at work and vehicles. A great start to this process is to use our response equipment to develop a

restricted (cold zone) area. Various police (local, state, etc.) could fill this task nicely most of the time. However, if passenger vehicles are selected for firefighter shielding where high speeds or large vehicles are possibly going to cause human damage, make sure that they are positioned in three or four "layers" to absorb the energy transfer at the point of impact long before the work zone area is affected. The notion is to completely block out the injury potential, not just to add more sheet metal to harm us.

Along with the mandatory physical protection barriers, consider roadside signage for early warning to the motorists. Most departments have quick access to public works or street departments that are generally great at marking (and unmarking) roadways. When we call out these supporting departments, it is usually for a long-duration, big-deal alarm. Some fire-rescue organizations have a limited selection of informational signs aboard the big red trucks. These could be very useful as well to notify oncoming traffic to slow down and move over.

ADMINISTRATIVE CONTROLS

Administrative controls are all of the procedural "stuff" that lets fire-rescue operations go smoothly. One of the most important administrative controls that comes to mind would be the incident command system. ICS gives structure (by policy) to properly control operations and beyond. Perhaps a practical example of safety administrative control would be a posted speed limit. The theory is that if a vehicle is correctly operated at the proper speed, then there should not be an accident or an accident where the vehicle speed was a contributing factor.

Standard operating guidelines (SOGs) are the bases for all administrative controls. All fire-rescue departments must be "guided" by written procedures to ensure efficiency and effectiveness and to provide for member safety. Operations should be structured in such a way that standard (expected) outcomes are forecasted early into the alarm and that the forecast becomes a reasonable reality. When I get to "hang out" with a department, and each shift (or even each battalion) operates like a different department (even though it is interesting), I get nervous for that chief, because disaster is usually looming like a dark cloud.

Another critical component of successfully applying administrative controls is ensuring that they are consistently used. Most departments do not have a structured training program for SOGs. This becomes a very big mistake and often costs a dear price in life, property and monetary losses. I have asked hundreds of firefighters about the development of their organizations' SOGs. About 90% of the time, the response is that someone screwed up and the chief had a deputy or battalion chief write a policy to prevent it in the future.

A follow-up question is, "When does the SOG book hit the kitchen table or desktop?" By far, the number-one answer is, "When the next person screws up and the Chief wants to write 'em up." The last policy-related question I ask is, "How often does the department formally train on the SOGs?" A few people will mention that the book is out for individual promotional study, but their departments never hold formal training on the policies. These responses always seem to put a knot in my stomach thinking about the potential negative outcomes that such an approach may cause.

Training is a critical element of the SOG process – no ifs, ands or buts! One very effective system that I employed was to discuss SOGs during monthly officers meetings. Using overhead transparencies, I would turn the SOG book into a visual presentation and review about five per month in detail. I tried to schedule the review in such a way that a complete review cycle took one calendar year. With the beginning of a new year, we would start over with SOG No. 1 and repeating this never-ending cycle. Most interesting, the officers would catch all of my errors such as spelling, various changes and the like. A great byproduct was a thorough annual updating of the SOG book. SOGs were used extensively in the development of promotional assessment center test measurements, which made the reviews more palatable for the collection of fire-rescue bosses.

A few critical guidelines that must be included in traffic-related operations include dispatching companies from both directions to incidents on limited-access highways. When a company is faced with the tough decision of either violating or not violating a safety procedure to "speed up" reaching the customers, the stark reality is that they will take the risk. Why should the department cause them to make this unwise decision in the first place? If a company is responding in the lane that is not reasonably accessible by the first-arriving fire truck, the pressure is "off" knowing that it is only a short time until help arrives from the correct direction while the first company goes to the proper turnaround point.

Worth mentioning here is to use the ICS all of the time. Don't go it alone. Call for help early and often. The police are experts at stopping and blocking traffic lanes, so invite them to be a part of the party as well. I would suggest a policy to limit the "human" resource exposure to street traffic whenever you can. Handle the incident and get out of the hazard zone as soon as it is reasonable.

The factor of human action and/or performance is a very simple concept to explain, understand and even write about in articles. However, without a doubt, human error is our "Achilles heel" when it comes to firefighter death and injury. Simply put, members must follow their policies, procedures and training all of the time. Firehouse® allowed me the opportunity to publish a seven-part series on Crew Resource Management. I would strongly suggest that if you are interested in improving your operations tenfold or more, then look into, develop and use a CRM program in your agency.

The other major element that comes to mind with human action/ performance is proper attitude. It is amazing to me just how powerful having and keeping a positive attitude can be for a successful outcome in just about any activity.

SUMMARY

Working at incidents that add the IDLH element of moving traffic must take on a lot more importance if we are going to lower our horrible accident rate. The statistics are crying out for us to make major changes in how we fundamentally do business on the streets in our community.

Every fire-rescue department must take on the task of developing and implementing a "Best Practice" policy. This policy must be the program's foundation. It must be valued throughout the organization, from the five-trumpet person to the "booter." Knowing that about 30 brothers and sisters are going to die in the streets this year as fire-rescue line-of-duty deaths is motivation enough that should cause us to fundamentally change how we deliver our services.

Keep the "safety chain" in mind as you go about your day-to-day operations. We must focus a lot of energy on controlling the four primary causes of accidents – engineering failures, administrative breakdowns, environmental factors and human error – as best we can to avoid accidents.

There is no need to go through your policy and "Best Practice" development process alone. Take advantage of the already developed materials and presentations that are out there to help "jump start" your program. Learn more about Crew Resource Management and always make sure your operations start under control, stay under control and end under control. Until next time, stay safe out there!

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