

# *Drive to Survive*



Fire Chief Richie Bowers  
Battalion Chief Jennie Collins

# Objectives

- Understand the root causes and factors associated with LODDs and case studies involving apparatus collisions
- Understand the exposures related to apparatus driving
- Identify strategies to reduce at risk driving behaviors
- Discuss design methods to improve driver training
- Discuss engineering methods to reduce risks

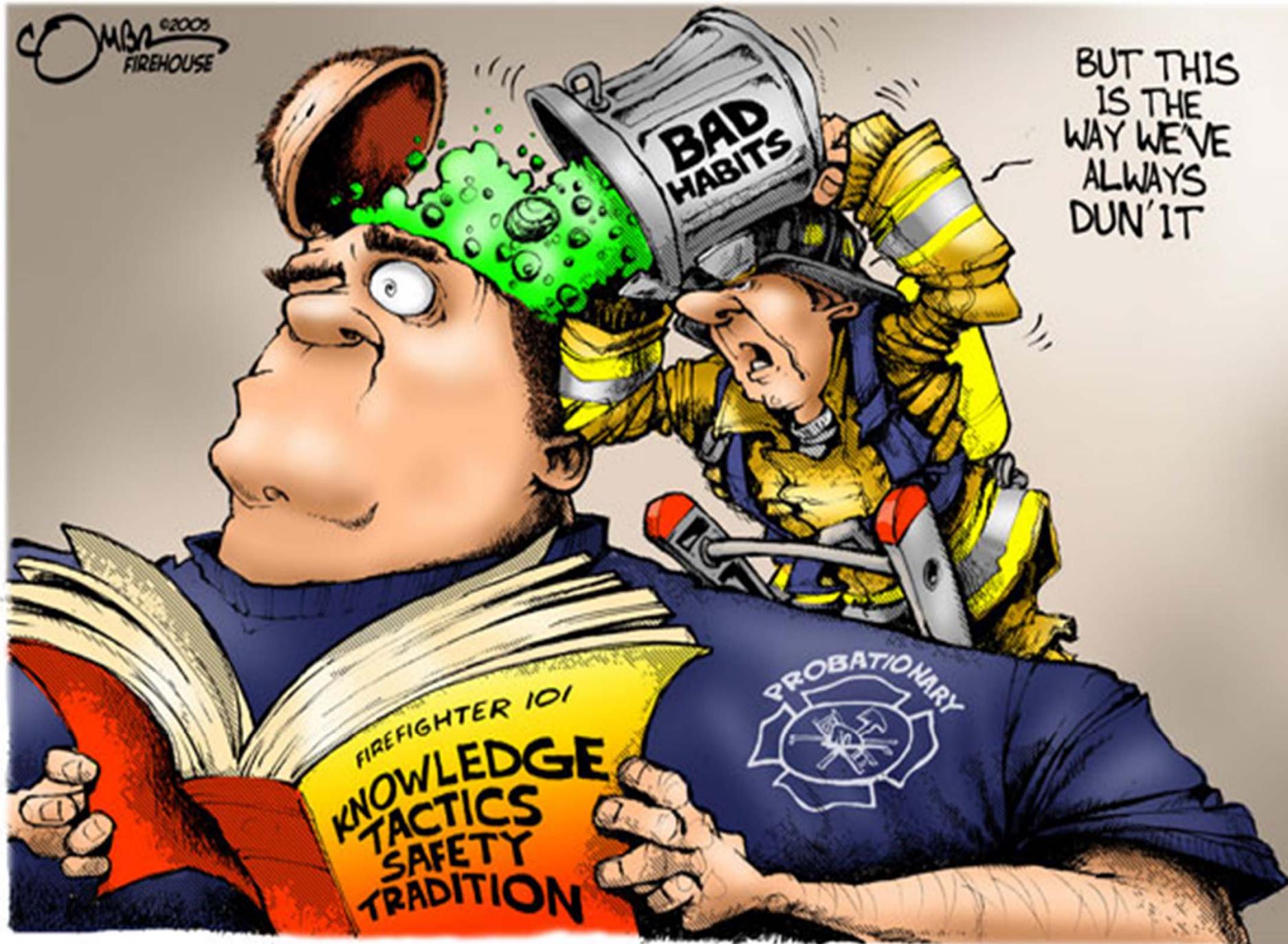




**“You have no right to risk people’s lives on the highway to save people who may be trapped in a fire.”**

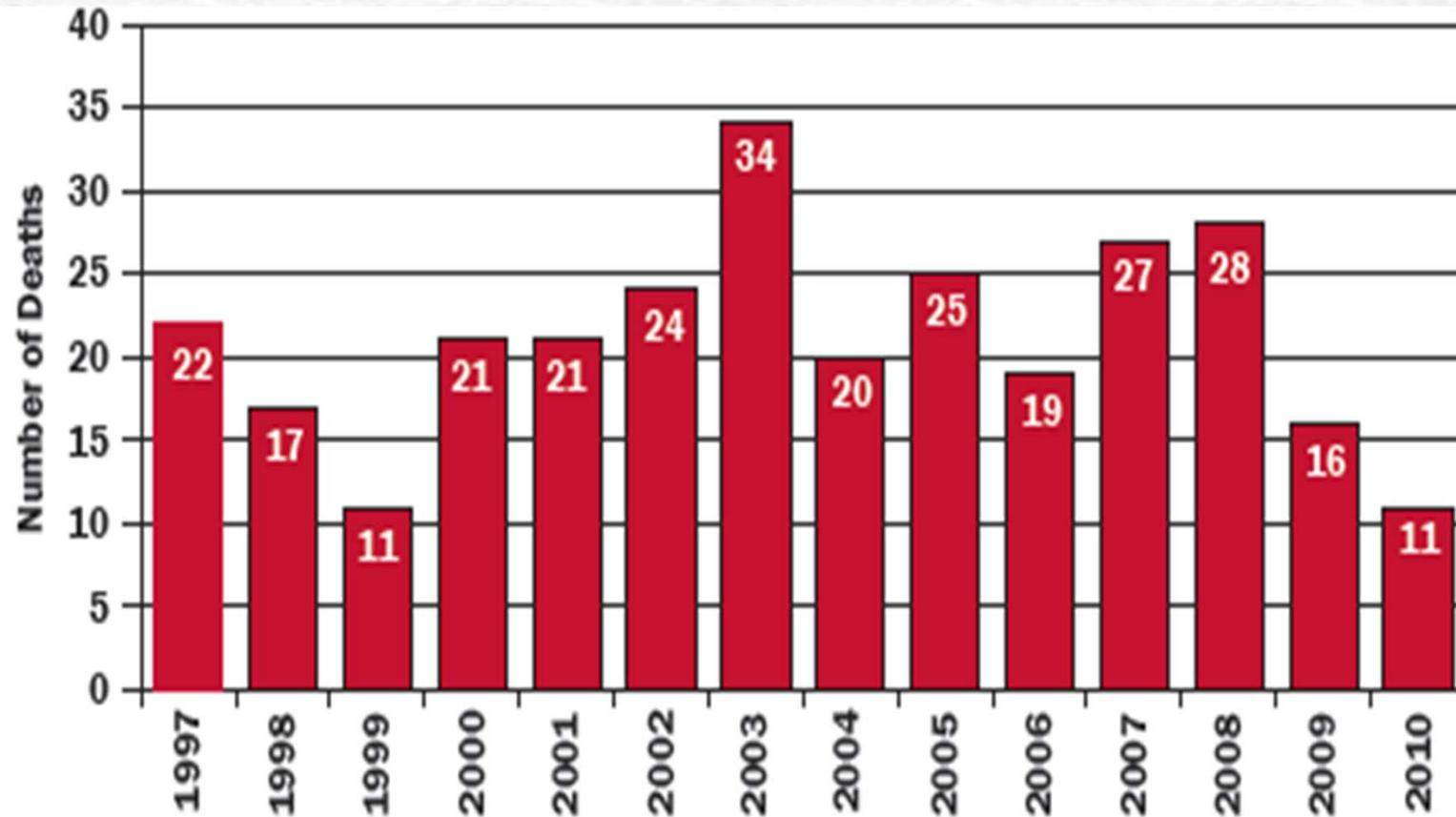
**Vincent Brannigan**

COMBS ©2005  
FIREHOUSE



BUT THIS  
IS THE  
WAY WE'VE  
ALWAYS  
DUN' IT

# Firefighter Fatalities in Vehicle Collisions



# 2010 Firefighter Fatality Statistics

- 11 died as the result of vehicle crashes
- 6 died while responding to incidents
  - 3 in POVs
    - 1 in an all-terrain vehicle that struck a deer - no helmet and alcohol involved
    - 1 wore a seat belt
    - 1 did not wear a seat belt and was fully ejected from the vehicle
  - 3 in apparatus
    - 2 did not wear a seat belt and were fully ejected - engine struck in intersection by SUV
    - 1 wore a seat belt became trapped in the cab of the truck hauling a D5 Caterpillar plow that did not successfully negotiate a curve

# 2010 Firefighter Fatality Statistics

- **1 died while returning from an incident**
  - Crushed between a backing tanker and parked apparatus in the bay
- **1 wildland firefighter died operating a snowcat**
  - Lost traction, tumbled down a slope, rolled more than three times killing the operator
- **1 wildland firefighter died when a crew carrier (with 12 firefighters) was struck by an oncoming SUV**
  - Several firefighters ejected, numerous severe injuries, including 1 who died from his injuries

# 2010 Firefighter Fatality Statistics

- Two youngest firefighters to die were both age 20
- **1 died when responding to a fatal crash**
  - Not wearing a seat belt
  - Lost control of pickup truck, struck a guardrail, rolled and he was ejected
- **1 died returning from training**
  - Riding as a passenger in a car that crashed
  - Involved in street racing against other firefighters in another vehicle

# Case Study

## MCFRS Collision History

- **10 Civilians killed in last 30 years**
- **1 Firefighter killed June 26, 1977**
- **Injuries**
- **Dollar Loss**
  - Direct Costs
  - Indirect Costs

# We Have A Problem

obey the sirens.

• The following are excerpts from an article written by Matthew Mosk of the *Washington Post*, headlined “Montgomery Fire, Rescue Crashes Rise”: “Drivers of Montgomery County fire trucks and ambulances have had more than 1,100 accidents in the last five years, doing so much damage to the fleet that the Fire and Rescue Service is at risk of losing its insurance coverage, according to county records. ... Montgomery has received warnings from its insurance underwriter that the mounting losses, totaling nearly \$2 million since 1997, “exceed trends from comparably sized fire service clients on both the east coast and the west coast,” according to a memo written by the county’s fire administrator. Departmental reviews of the most serious accidents, including crashes that left one motorist dead and more than a dozen injured, have found that many could have been avoided had drivers slowed before entering intersections or followed proper procedures as they responded to emergency calls. There

**Fire House  
Magazine  
November 2003**

# METRO

FRIDAY, AUGUST 20, 2004

## Emergency Vehicle Crashes Worry Montgomery Officials

*Firetruck, Ambulance Accidents Raise Insurance Rates*

By TIM CRAIG  
*Washington Post Staff Writer*

Drivers of Montgomery County firetrucks and ambulances continue to be involved in what officials regard as an alarming number of accidents, causing insurance rates to skyrocket and forcing new policies designed to slow response times to some calls.

In a stern department-wide e-mail last month, prompted by four accidents within a 26-hour period over the Fourth of July weekend, Thomas W. Carr Jr., chief of the county's career firefighters, said

the drivers' performance was placing the public and fire and rescue personnel at risk.

"I am sitting in my office on July 4 thankful that I am not in the throes of planning a firefighter funeral or assisting a civilian family with their grief," he wrote. "We must break the chain and we have to do it immediately and that may take radical action. I am prepared to take action."

He added: "I am afraid we continue on the path to catastrophe."

No details about the recent accidents were available yesterday, but Carr's e-mail indicated that there

were no injuries.

In May 2003, The Washington Post reported that Montgomery firetrucks and ambulances had been involved in 1,100 accidents in the previous five years, doing so much damage to the fleet that the department risked losing its insurance coverage.

Departmental reviews of the most serious accidents, including crashes that left one motorist dead and more than a dozen injured, found that many could have been avoided had drivers slowed before

See FIRETRUCKS, B4, Col. 5

# Case Study #1

- **Tanker Accident**
  - Responding to house fire
  - Tanker following engine
  - Engine cleared intersection
  - Tanker t-boned POV in intersection
  - Driver attitude and experience



## Case Study #2

- **Aerial Tower 8**
  - Responding to house fire
  - Holiday weekend
  - Attempting to make left turn
  - Rate of speed
  - Driver attitude and experience



# Impacts

- **Erosion of Public Trust**
- **Lack of Confidence in the Organization**
- **Risk Management impacts**
  - Insurability
  - Injuries and LODDs
- **Public Education**
- **Legislative Actions**

# Behavior Based Safety

- **Use of applied behavioral analysis methods to achieve a marked improvement in safety performance**
  - Driver Observations
  - Collision Analysis
  - Forum on Collision Reduction

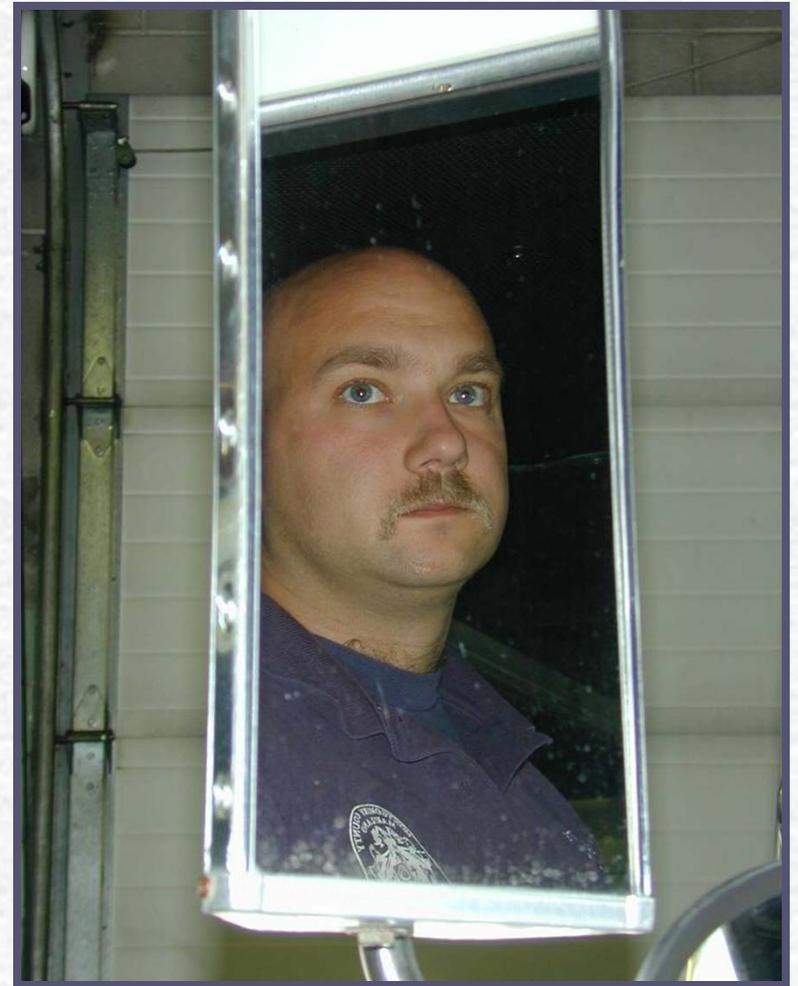
# Behavior Based Safety

- **Our focus has been on speed since the first day of training**
  - Arriving FAST vs. arriving SAFELY
  - If you don't arrive, how can you help!

# Behavior Based Safety

Each shift tell yourself:

“I am going to do my best to drive safely and avoid a collision today”



# Changing Behavior

- **Education**
- **Engineering**
- **Enforcement**
- **Positive Peer Pressure**

# Addressing the Issues

More Than One Thing  
to Fix the Problem

Change the Behavior

Community Outreach  
& Education

Changing the Culture

**MCFERS**

Accountability

## 25 POINT ACTION PLAN

Safe Driving Incentives

Apparatus Safety Design  
and Specifications

Policy Revisions

# 25 Point Action Plan



## #1. Driving Policy

Drivers must continue to show due regard for traffic, road and weather conditions, visibility, and any other factor effecting driving conditions. Drivers will not be permitted to exceed the posted speed limit by more than 15 miles per hour under any circumstances.

## 25 Point Action Plan

#2. Officers and personnel riding the officer position have, and should utilize,

**“STOP DRIVING  
AUTHORITY”**



# 25 Point Action Plan

## #3. Zero tolerance of seat belt violations



## **25 Point Action Plan**

**#4. Designated Heavy Apparatus Drivers, as well as two back up drivers, will be established for each piece of heavy apparatus on each shift**

# 25 Point Action Plan

## #5. Develop an Approved Driver List

- Maintained by the Safety Office
- Identifies personnel allowed to drive under the Department's insurance policy



## 25 Point Action Plan

#6. All primary designated drivers will be sent to an 8 hour driving class specific to the type and breed of apparatus to which they have been assigned

- Smith System
- Defensive Driving
- Techniques

**8 hours  
training**

## 25 Point Action Plan

**#7. Unit officers who have arrived on the scene of an incident, made an assessment, and believe that the incident is not complex should consider having all other incoming units proceed routine to the incident**



## 25 Point Action Plan

**#8 On full assignments and local alarms unit responsibility is determined by order of dispatch – not order of arrival**



## 25 Point Action Plan

**#9. We will continue to hold officers fully responsible for the actions of their drivers**

**NO  
EXCUSES**



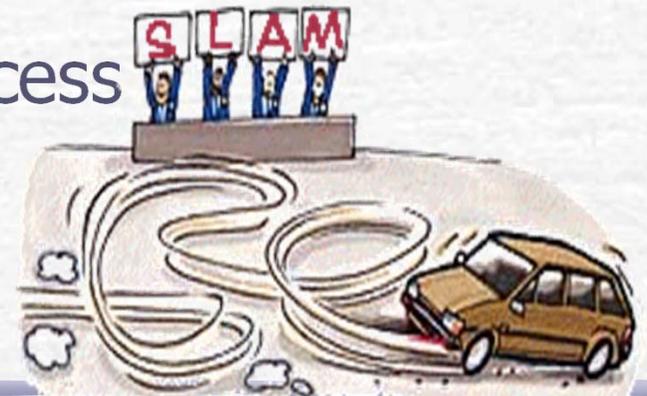
## **25 Point Action Plan**

### **#10. Development and implementation of the full driver training and recertification program**

- Driver Training Coordinator Position
- Standardized Driver Training Program
- Revised Driver Training Policy

# Apparatus Driving Programs

- **Basic (Emergency Vehicle Operators Course)**
  - 40 hour course
  - Safe driving procedures
  - Collision avoidance
  - Skid pan exercise
  - DOT Apparatus Inspection Process



# Apparatus Driving Programs

- **Class "A" Apparatus Drivers Course**
  - 70 hours
  - Classroom
  - Practical Course
  - Comprehensive DOT Inspection Process



# Apparatus Driving Programs

- **Class "B" Apparatus Drivers Course**
  - 70 hours
  - Classroom
  - Practical Course
  - Comprehensive DOT Inspection Process



## Safe Driving Behaviors

- Get the Big Picture
- Maintain Eye Movement
- Make sure you see others
- Aim high in steering
- Defensive Driving Techniques (skills)
- Leave an “out” for your vehicle
- Avoid Tunnel Vision
- Backing w/Spotter
- Clearance
  - Squeeze Play

## Primary Driver Expectations

- Role Model
- Walk the Walk
- Trainer
- Proficient Operator
- Evaluator
- Safe Driver
- "O" Collisions

# Observation Form Commentary Driving



**MONTGOMERY COUNTY FIRE AND RESCUE SERVICE  
PROACTIVE DRIVER INTERVENTION PROGRAM**

## PEER OBSERVATION FORM

Driver Name: \_\_\_\_\_ ID# \_\_\_\_\_ Date: \_\_\_\_\_

Station/Shift/Dept: \_\_\_\_\_ Observer: \_\_\_\_\_

Unit #: \_\_\_\_\_ Make: \_\_\_\_\_ Year: \_\_\_\_\_

Emergency Response \_\_\_\_\_ Non-Emergency Response \_\_\_\_\_

Starting, Leaving the Station, Scene or Parked Position. 3 Points Each Behavior.	# Points
1. Daily apparatus check – Operator completed a daily apparatus check to ensure the vehicle is in safe operating condition.	
2. Circle Check – Operator completed a circle check before entering cab to check for open doors, loose equipment, clear path, and all personnel seated and restrained.	
3. Adjustments – Operator completed an adjustment to mirror, seat, and steering wheel before moving and checked for oncoming traffic before pulling out.	
4. Visual Scan – Operator completed a visual scan of the field of vision before moving.	
5. Seat Belts – All personnel in the vehicle were seated and restrained prior to moving.	
In Motion. 5 Points Each Behavior (-1 point for each infraction to max of 5 per behavior).	# Points
1. Space Cushion – Operator maintained a safe following distance defined as no less than 2 seconds at 20mph and 1 extra second for each additional 10mph.	
2. Visual Lead Time – Operator had an adequate visual horizon and was looking over the vehicle immediately in front.	
3. Eye Movement – Operator did scan entire field at least once every 10 seconds while moving and more frequently at intersections.	
4. Covering the Brake – Operator covered the brakes to reduce reaction time while proceeding through intersections, squeeze plays, downgrade, and other hazardous driving situations potentially requiring rapid deceleration.	
5. Appropriate Speed for Conditions – Operator reduced speed for road/weather conditions, school zones, stopped bus, pedestrians, residential area, parking lots, tunnel, narrow roads, overhead hazards, and other hazards.	
6. Guarded and Unguarded Railroad Crossings – Operator comes to a complete stop and looks both ways at all railroad crossings.	
7. Hands Free – Operator had hands free for steering and shifting. Operator did not smoke, drink a beverage or eat; reach for an object; adjust mirror, seat or steering wheel, or hold object while in motion.	

8. Steering – Operator maintained a 9-3 hand placement; vehicle under control at all times.	
9. Signaling – Operator changed lanes when lane is clear, signal to flash 2-3 times before beginning lane change. A minimum of 2-4 seconds following distance in front of and behind vehicle when beginning lane change is maintained.	
10. Traffic Signs/Signals – Operator is aware of and obeys all traffic signs ( <b>Running a red light or stop sign is automatic failure of road evaluation</b> ).	
Intersections. 5 Points for Each Behavior (-1 point for each infraction to max of 5 per behavior).	# Points
1. Cover the Brake – Operator covered the brake while approaching and crossing the intersection or during a squeeze play.	
2. Eye Movement – Operator observed the entire intersection including oncoming traffic from the right and left sides.	
3. Reduce Speed – Operator reduced speed to first gear or 10mph or less when approaching (100 feet) a red light, stop sign, using the opposing traffic's lane, or executing a squeeze play.	
4. Intersection Stop – Operator completely stopped at the intersection when the intersection was not clear of moving vehicles.	
5. Jumping – Operator did not jump the red light or jump a turn right on red requiring opposing traffic to slow down (routing driving).	
6. Clear Space – Operator maintained a clear space while stopped at intersection equal to one-half the apparatus length.	
Arriving on Scene or Stopping. 3 Points for Each Behavior	# Points
1. Deceleration – Operator planned ahead for the stop by decelerating thus avoiding a hard-brake.	
2. Pass the Address – Operator did not pass the address requiring the vehicle to be hard-braked, backed or u-turned.	
3. Spotting – Operator spots the apparatus at a slow speed for tactical advantage.	
4. Parking Brake – Operator sets the parking brake before personnel dismount and for non-traffic stops longer than 10 seconds.	
5. Wheel Chock – Operator dismounts vehicle and properly places a wheel chock.	
Backing. 5 Points for Each Behavior	# Points
1. Spotter – Vehicle backed with the use of a spotter.	
2. Spotter – Spotter maintained eye contact and utilized adequate hand signals.	
3. Circle Check – Operator completed a circle check before backing without a spotter and visually scanned the area backing into.	
<b>TOTAL POINTS POSSIBLE – 125. POINTS NEEDED TO PASS - 107</b>	
<b>TOTAL OPERATOR POINTS</b>	

## **Practical Exercise**

- **Straight Line & Diminishing Clearance**
- **Off Road Shoulder Exercise**
- **Serpentine**
- **Visual Scan (Intersection)**
- **Off-Set Ally**
- **Braking Control**
- **COMAR Inspection**
- **Commentary Driving on Road**

# 25 Point Action Plan

## #11. Begin a regional community education and awareness program

- “See us, Hear us, Clear for us”
- Educate citizens on the proper way to clear for our units



## 25 Point Action Plan

#12. Critical safety messages and reminders will be transmitted over the radio and to the MDC's for display on the monitors



## **25 Point Action Plan**

**#13. A designated group of chief officers will begin making unannounced station inspections that will focus on apparatus readiness and driving related issues.**

## 25 Point Action Plan

**#14. The driver observation program will be further developed, implemented and institutionalized**



# 25 Point Action Plan

**#15. Current Driving Policy, Safe Emergency Vehicle Operation will be reviewed and revised as appropriate**



## 25 Point Action Plan

- **#16. Adjust EMS responses:**
  - Enforce routine patient transport according to the EMS Operations Manual
  - Alpha calls: one unit only
  - Bravo calls: two units only 1BLS/1<sup>st</sup> responder
  - Charlie calls: 1 BLS, 1 ALS, 1<sup>st</sup> responder
  - Charlie calls: if 2 closest medics unavailable, then 1 BLS & 1 AFRA dispatched
  - Delta and Echo calls will remain the same

# 25 Point Action Plan

**#17. Effective July 26, 2004 the MCFRS Rescue Squad Study response recommendations implemented**



# 25 Point Action Plan

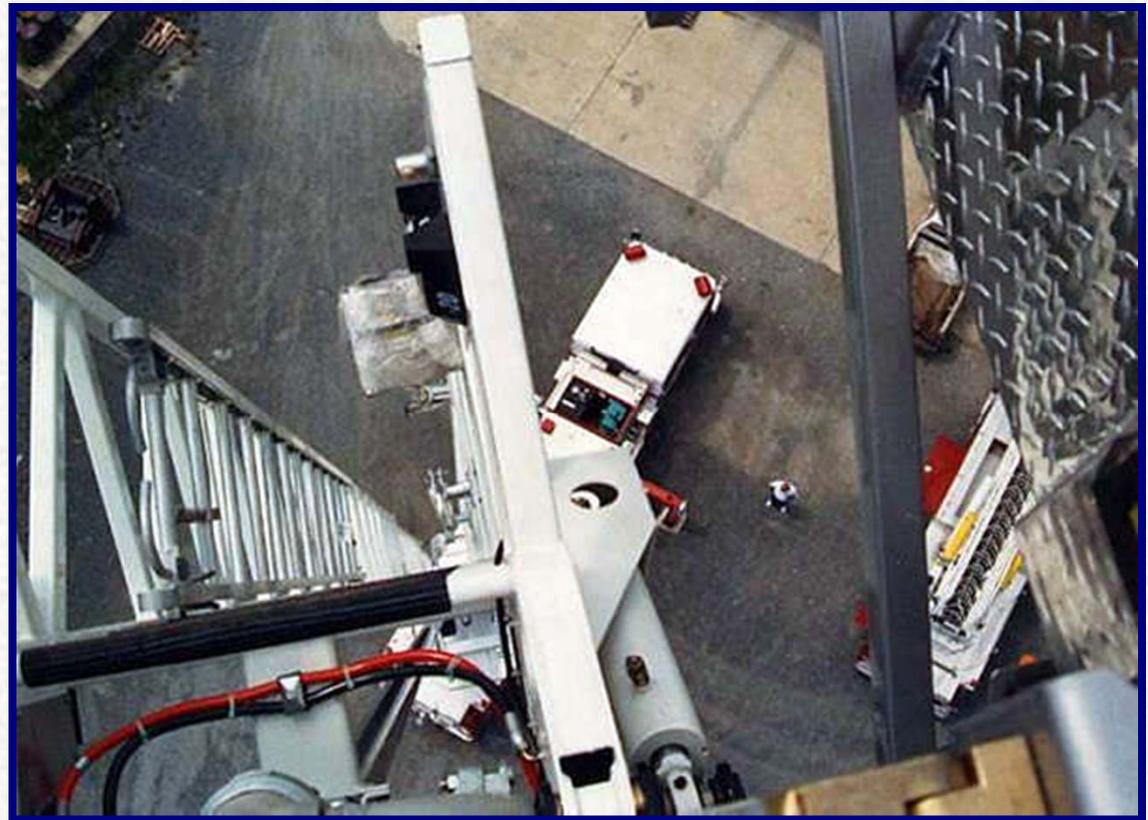
## #18. Improve incentives for demonstrated safe driving

Drivers and Unit Officers  
Recognition/Monetary  
Incentives



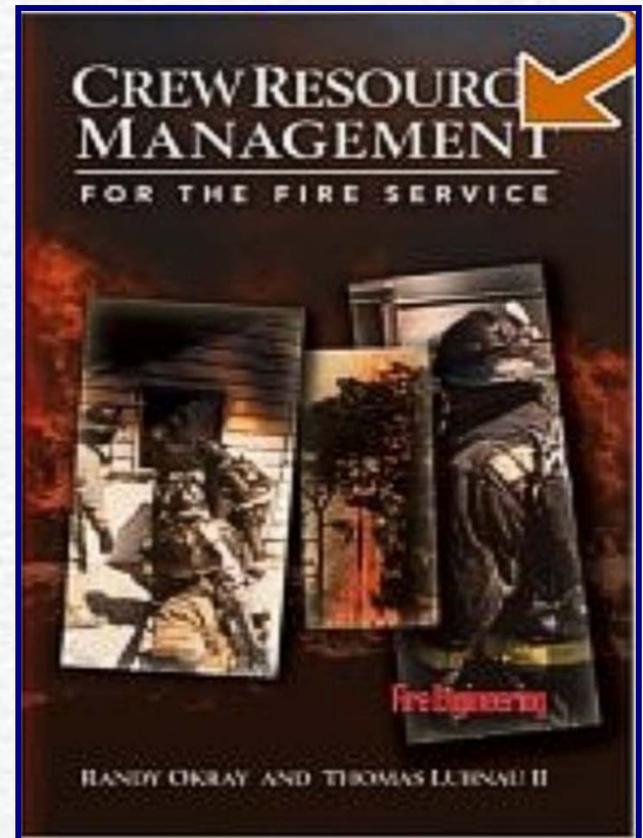
# 25 Point Action Plan

## #19. Expand the Pumps and Aerial Ops Classes



## 25 Point Action Plan

#20. Include the concept of crew resource management in EMT-B recertification training



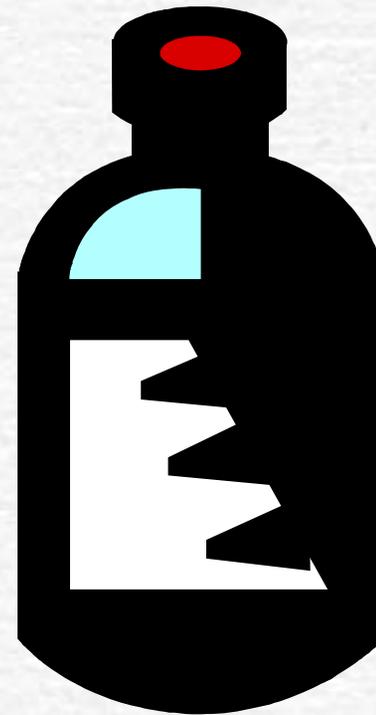
# 25 Point Action Plan

## #21. Develop an Heavy Apparatus "A" & "B" Driving Courses



## 25 Point Action Plan

#22. Implementation of a service wide random drug testing policy



## 25 Point Action Plan

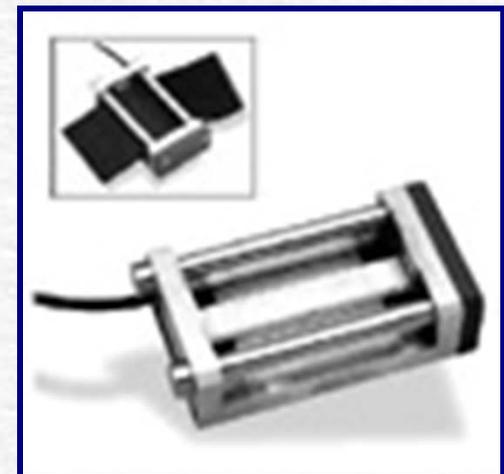
#23. Explore new apparatus technologies such as seat belt alarms, vehicle data recorders, video recorders and air bag technologies

Apparatus Reflective Markings

Speedometer Gauges for Officer Position

45 Degree Angle on Bumpers

Large **STOP** signs on interior doors



## 25 Point Action Plan

**#24. Push apparatus manufacturers and vendors to be responsive to our safety needs and leverage this demand at the national level**



## 25 Point Action Plan

**#25. Develop, sponsor, and host a national forum on safe apparatus driving to exchange information and ideas**



***Driving heavy  
apparatus is a  
privilege, not a  
right.***

# Strategies

- **Accept responsibility for safe driving**
  - Post collision actions
  - For cause testing
- **Develop a safe driving action plan**
- **Comply with applicable laws**
  - Ashley's Law
- **Driver certification and recertification policies**
  - Driving record checks
- **Engineering**
  - Traffic Preemption Devices
  - In cab cameras – DriveCam
- **Accident review committees**
  - Driver remediation

# Monitoring

VEHICLE COLLISIONS							
Number of Incidents	<table border="1"> <tr> <td>114<sup>th</sup></td> <td>vs.</td> <td>113<sup>th</sup></td> </tr> <tr> <td>16</td> <td></td> <td>15</td> </tr> </table>	114 <sup>th</sup>	vs.	113 <sup>th</sup>	16		15
114 <sup>th</sup>	vs.	113 <sup>th</sup>					
16		15					
Overall Percent Change	<p>0.13% Increase</p> 						
Where performance has IMPROVED	<ul style="list-style-type: none"> <li>↻ Normal Driving</li> <li>↻ Backing (unchanged)</li> </ul>						
Where performance has DECLINED	<ul style="list-style-type: none"> <li>↻ Responding</li> <li>↻ Parked</li> </ul>						
Key RECOMMENDATIONS	<ul style="list-style-type: none"> <li>❖ Consolidate driving policies</li> <li>❖ Increase training opportunities, including practical and virtual</li> <li>❖ Mandate continuing education component for drivers</li> </ul>						
Non-documented considerations potentially impacting incidents	<ul style="list-style-type: none"> <li>❖ Driver Simulator Training</li> <li>❖ Damage cause unknown</li> <li>❖ Non-preventable</li> <li>❖ Increase in call volume</li> <li>❖ Complacency in daily routine</li> </ul>						

## **Train, Train, Train**

- **Formalize Your Driver Training Program – each class of vehicle**
- **Smith System**
- **Driving Simulators**
- **Defensive Driving Courses**
- **Driver Refresher Programs**
- **Insurance carrier cooperation**





# Questions/Comments



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