
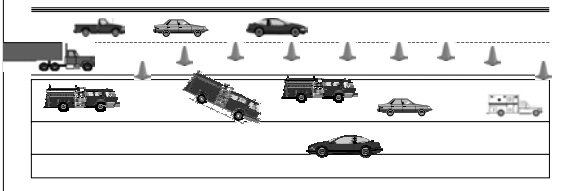



Highway Incident Safety for Emergency Responders






Jack Sullivan, CSP, CFPS
Director of Training
Emergency Responder Safety Institute

Phone: 804-639-1312
jack@lionvillefire.org




March 9, 1998

Philadelphia Inquirer

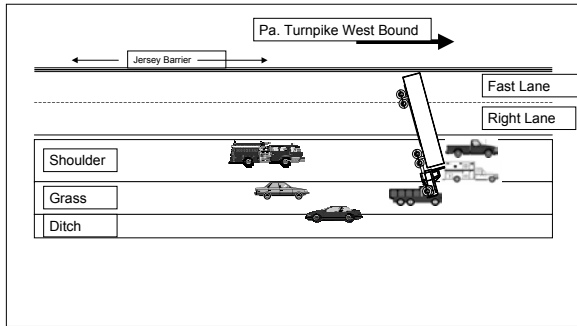
“ It Was Just A Routine Call..... ”



Incident Overview

- March 9, 1998 - Raining with wet roadways
- Initial alarm was at 14:10 for a car in a ditch, on the Pennsylvania Turnpike, just west of the Downingtown Interchange, Milepost 310.9
- Uwchlan Ambulance and Lionville Fire / Rescue responded with an Ambulance, Engine, Rescue, the Chief & an Assistant Chief.

Scene Diagram

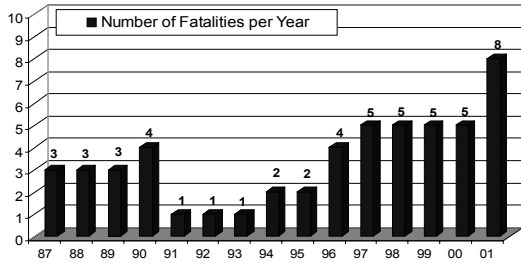




**Turnpike Incident Notes & Photos
and Highway Incident Safety Links**

www.lionvillefire.org

Fire/ EMS - Fatalities Struck by Vehicles



2001 numbers include 1 fatality in Canada & 1 in Australia, with 6 in U.S..

2000 Fire & EMS “Struck By” Incidents

- 22 Incidents involving Fire & EMS personnel
- 4 Firefighter & 1 EMT Fatalities
- 19 Fire or EMS responders injured
- 13 fire apparatus or ambulances struck

**Firefighters responding
to calls, need to operate
“as if someone is trying to run them over”**

James Joyce, Commissioner
Chicago Fire Dept.
January 2001

2001 Fire & EMS “Struck By” Incidents

- 34 Incidents Total
(32 in US, 1 in Australia & 1 in Canada)
- 8 Fire / EMS Fatalities - 6 in U.S. &
1 Firefighter each in Australia & Canada
- 26 Fire / EMS responders injured

2001 Fire & EMS “Struck By” Incidents

- 19 Incidents while operating at MVA scenes
- 9 Incidents while personnel “directing traffic”
- 9 Incidents while operating at fire scenes
- 4 Incidents while backing units into stations
- 4 Incidents involving fire apparatus that “rolled” while parked at incidents

2002 Fire & EMS “Struck By” Incidents

- 01-01-02 : Madras, OR - Paramedic struck & killed
Placing flares out to protect the scene of an MVA when he was struck by tractor trailer.
- 01-02-02 : Tampa, FL - Fire Engine Struck
On scene of a shopping center building fire. Engine was in parking lot, and was struck by a stolen car driven by a teenager.
- 01-06-02 : Goochland, VA - Firefighter struck & leg amputated. Car skidded on ice and struck firefighter who was pinned between two vehicles.

2002 Fire & EMS “Struck By” Incidents

- 03-13-02 : Norfolk, VA - 2 Firefighters struck & injured.
Fighting a car fire in HOV lanes in dense fog. Struck by civilian who could not see the scene.
- 03-20-02 : Gluckstadt, MS - Firefighter Struck & killed
Working an MVA on an Interstate, struck by motorist while crossing the road.
- 03-25-02 : Long Island, NY - 2 Firefighters struck. One killed and one seriously injured. Driver under the influence ran through road barricades and struck them at the scene of a training exercise.

2002 Fire & EMS “Struck By” Incidents

- 05-05-02 : Brookhaven, PA - Jr. Firefighter struck & killed. Responding on his bicycle to the firehouse for a fire call, and was struck by an auto.
- 05-09-02 : Oktibbeha County, MS - Fire truck struck & civilian killed. Truck was parked on side of the road for training exercise.
- 06-05-02 : Cleburne, Texas - Fire truck struck & EMT and 3 others injured. Firefighters and EMT's working a previous MVA were struck when a tractor trailer slid into the scene, striking fire truck, which hit the EMT.

2002 Fire & EMS “Struck By” Incidents

- 06-08-02 : Wildwood, FL - Firefighter & doctor struck & killed. Four others injured when a group of people helping victims of an MVA were struck by a tractor trailer that lost control on wet roads approaching the scene.



Wildwood, FL Incident











2002 Fire & EMS “Struck By” Incidents

- **06-13-02** : Sampson County, NC - Fire truck struck while it was parked at the scene of a previous MVA, which involved an EMT who was killed in the primary incident.
- **06-20-02** : Hanover County, VA - Fire truck struck and four (4) firefighters injured on the shoulder of I-95 NB while investigating a reported MVA.

2002 Fire & EMS “Struck By” Incidents

- **07-01-02** : Esko, MN - 2 Firefighters struck & one killed. One deputy and a civilian also injured when a car plowed into the scene of a car fire, and struck the group on the shoulder of I-35.



2002 Fire & EMS “Struck By” Incidents

- **08-06-02 : New York, NY – EMT struck while loading a patient.**
A car driven by a driver under the influence of alcohol slammed into the EMT at the back of an ambulance while they were loading the patient. The EMT’s leg was caught between the striking vehicle and the ambulance, and his leg was critically injured, and may be amputated.
- **08-19-02 : Richmond County, NC – Rescue Squad Chief struck and killed by a truck, while assisting at the scene of a previous MVA. Several others injured.**
7
- **xx-xx-02 : Somewhere, USA - ???????**

Other Notable Fire & EMS Incidents

- **5-03-98 : Hagerstown, MD - Firefighter Struck & Killed**
Directing traffic at vehicle accident
(Driver was distracted by incident operations)
- **6-16-98 : Harmonville, PA - Firefighter Struck & Injured**
Struck & dragged 20 yards, at accident scene (video)
- **1-05-99 : Kiln, MS - Firefighter Struck & Killed**
Working at scene of mobile home fire
(Driver was blinded by lights from engine facing traffic)

Notable Fire & EMS Incidents

- **08-05-99 : Midwest City, OK - Firefighter Struck and Killed**
Working at scene of earlier MVA on Interstate 40.
One other firefighter also injured in the wreck.
(This incident was the subject of a NIOSH Investigation)
- **2-18-99 : Prince George’s County, MD - Deputy Chief**
Arrested for closing southbound lanes of I-95 at an accident scene

Similar Police Dept. Incidents

- Since 1900, >1,000 police officers have died in the line of duty, struck by vehicles
- 24 police officers died after being struck by vehicles outside of their cruisers in 2000
- 28 police officers were struck & killed outside of their cruisers, in 2001

SOURCE: The Officer Down Memorial Page & The National Law Enforcement Officers Memorial Fund

Examples of Police Incidents

- **09-04-01 : Salem, OR – 3 Police Officers Struck, 2 Killed & 1 Injured, assisting disabled vehicle on I-5**
- **09-09-01 : Schertz, TX – Police Officer Struck & Injured, leg severed while placing cones at MVA on I-35**
- **09-14-01 : Washington, Twp., IN - Police Officer struck while on a traffic stop, driver kept going. Police officer received neck & back injuries**
- **08-28-01 : Greenville, SC - Police officer struck by impaired driver while standing on side of the road at burglary call.**
"I never thought about standing on the side of the road and getting run over," Curtis told News 4. "This is one of the things I hadn't thought about. It's a shock."

03-04-99 : Indianapolis, IN - ISP Trooper & 2 civilians killed, 2 other civilians and another trooper also injured
Cruiser, on toll road shoulder, struck by tractor trailer



API News Report

“Best Practices”

- **Build awareness through more intense training**
 - Firefighter I or EMT - B classes
 - Station or Company Orientation
 - Annual In Service Training
 - Bulletins, SOG's, Lessons from Losses
 - Evaluate apparatus placement & safety procedures during all drills, training sessions and emergency calls.

“Best Practices”

- **Multi-agency coordination & communication**
 - Fire, EMS mutual aid agencies
 - Law Enforcement agencies
 - DOT, wrecker services, HazMat contractors
 - Preplan traffic control plans for major routes
 - Table top drills with mutual aid agencies ?

“Best Practices”

- **Limit the Exposure**
 - Minimum Apparatus & Personnel
 - Limit crews on scene to only those necessary
- **Limit the time on scene**
 - Clear-up crews as soon as possible

“Best Practices”

- Need for advance warning to slow passing traffic
 - Arrow Boards, Flares, Cones, Police Cars, DOT signage
 - Variable Message Signs, News Media / Traffic Reports



Ron Moore, Plano (TX) Fire Dept.



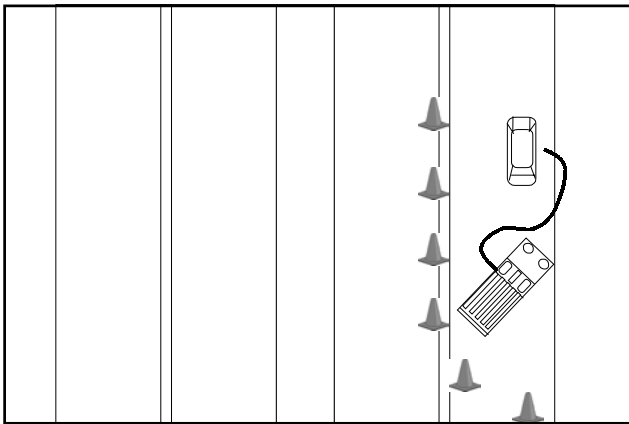


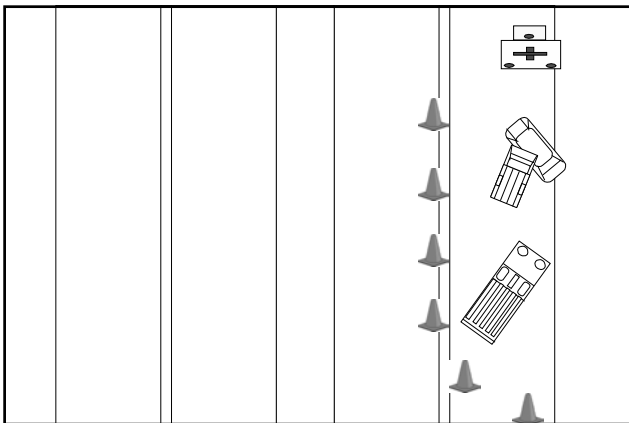
“Best Practices”

- **Apparatus Positioning and Arrangement**

- Guard the scene, guard the crew
- Park apparatus at an angle & turn the wheels







“Best Practices”

- **Work on side away from traffic**

- Look ! Before disembarking apparatus

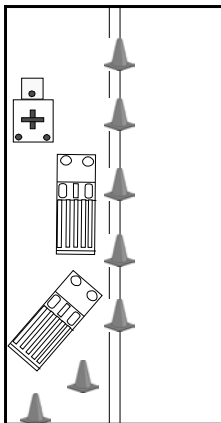
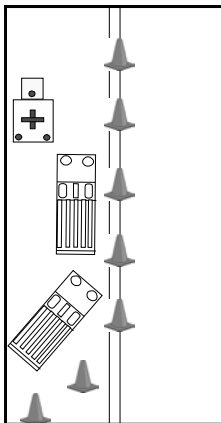
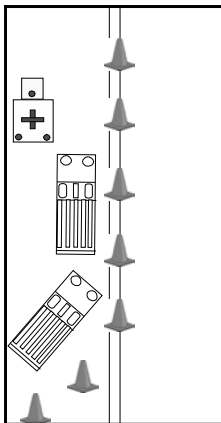
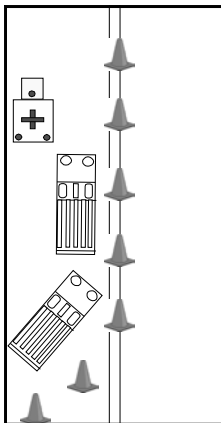
- Consider Pump Operators & Location of equipment



“Best Practices”

- **Shut Down the Roadway**

- Not Popular with Law Enforcement or the public
 - May be Necessary ! - Plan for it in advance.

Cone Placement		
	Posted Speed Limit	Distance
	35 MPH	100 ft.
	45 MPH	150 ft.
	55 MPH	200 ft.
	> 55 MPH	250+ ft.

“Best Practices”

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

“Best Practices”

- Require Retro-reflective or Florescent clothing / PPE
 - Structural gear may not offer “high visibility”
 - Safety Vests - Get them & Use Them !
 - 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
 - Co. Officers monitor & enforce their usage ?
 - SO carry spares ?
 - Vests on apparatus ? Assigned to each person ?

Traffic Safety Vests



ANSI Class I



ANSI Class II



“Best Practices”

- **Personal Protective Equipment**
 - Use of helmets and turnouts prevented more serious injuries at the Lionville incident.

- **Design safety features into all new apparatus**
 - Use of better reflective markings on rear of apparatus
 - Space for storage of traffic control equipment
 - Design lighting to protect the incident scene

**Plano, Texas Fire Department
Apparatus Markings**



Ron Moore, Plano (TX) Fire Dept.







“Best Practices”

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

NIOSH Firefighter Fatality Investigations

- NIOSH Report 99F-27 - August 5, 1999 Incident in Oklahoma - 2 Career firefighters were struck on an interstate; one was killed, and one with serious injuries
 - On the internet: < <http://www.cdc.gov/niosh/face9927.html> >
- NIOSH Report 99F-38 - September 27, 1999 Incident in South Carolina - Volunteer dies after being struck by a tractor trailer truck.
 - On the internet : < <http://www.cdc.gov/niosh/face9938.html> >

NIOSH Firefighter Fatality Investigation Recommendations

- Establish, implement and enforce, standard operating procedures (SOP's) regarding emergency operations for highway incidents.
- Position apparatus to take advantage of topography and weather conditions (uphill / upwind) & protect firefighters from traffic.
- First control oncoming vehicles before addressing the emergency event, in the event the police have not arrived.
- Ensure that personnel position themselves and victims in a secure area, when it's not possible to protect the incident scene.
- (DOT) - Use of “variable message signs” to inform motorists of hazardous conditions or vehicular accidents.

**NIOSH Firefighter Fatality Investigation
Recommendations**

- Ensure that personnel park or stage unneeded vehicles off the street / highway whenever possible.
- Ensure that personnel wear personal protective clothing that is suitable to that incident while operating at an emergency scene such as a highly reflectorized flagger vest (strong yellow green and orange).
- Ensure that personnel conducting traffic control measures use a highly visible stop / slow paddle.
- Establish pre-incident plans for areas that have a higher rate of automobile incidents.

"Those that have died in highway accidents are gone.

**There is nothing we can do for them except mourn
their passing.**

This book is dedicated to the living.

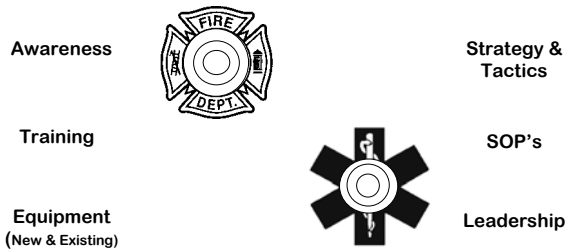
There is much we can do for them.

The task is monumental.

The effort starts with training."

Harvey Grant- Vehicle Rescue (1975)

Take Action !



Don't be a Target !

The Emergency Responder Safety Institute
www.respondersafety.com

Sponsored by the Cumberland Valley Vol. Firemen's Assoc.



Jack Sullivan, CSP, CFPS
Director of Training
804-639-1312
jack@lionvillefire.org