Homework Assignment 9

Jeff Wallin
Assistant Chief,
Moorhead Fire Department, MN
There are several requirements for brake and other vehicle inspections on fire apparatus.
• 6.4 Inspection, Maintenance, and Repair of Fire Apparatus.
• 6.4.1* All fire apparatus shall be inspected at least weekly, within 24 hours after any use or repair, and prior to being placed in service or used for emergency purposes, in order to identify and correct unsafe conditions.
• 6.4.2 A preventive maintenance program shall be established, and records shall be maintained as specified in 4.6.5.
• 6.4.3 Inspection, maintenance, and repair of fire apparatus shall be conducted in accordance with NFPA 1915, Standard for Fire Apparatus Preventive Maintenance Program. (NOW IN NFPA 1911)
Vehicle Maintenance Requirements

Requirements of NFPA 1500

- 6.4.4* The fire department shall establish a list of major defects to be utilized to evaluate when a vehicle shall be declared unsafe.
- 6.4.4.1 Any fire department vehicle found to be unsafe shall be placed out of service until repaired.
- 6.4.5 All repairs to fire department apparatus shall be performed by personnel meeting the requirements of NFPA 1071, *Standard for Emergency Vehicle Technician Professional Qualifications*, or personnel trained to meet the requirements identified by the manufacturers in their specifications and procedures for fire department vehicles and protective equipment.
• 6.4.6 Fire pumps on apparatus shall be service tested in accordance with the applicable requirements of NFPA 1911, Standard for Service Tests of Fire Pump Systems on Fire Apparatus.

• 6.4.7 All aerial devices shall be inspected and service tested in accordance with the applicable requirements of NFPA 1914, Standard for Testing Fire Department Aerial Devices. (NOW IN NFPA 1911)

• 6.4.8 All fire apparatus shall be cleaned and disinfected in accordance with NFPA 1581, Standard on Fire Department Infection Control Program
Vehicle Maintenance Requirements

Requirements of NFPA 1911

• 4.5 Inspections and Maintenance.
• 4.5.1 The fire apparatus shall meet all federal, state or provincial, and local laws for motor vehicle inspection.
• 4.5.2* All inspections and maintenance shall be conducted in accordance with the manufacturer’s recommended procedures.
• 4.5.3* It shall be the responsibility of the AHJ to develop and implement a schedule for the operational checking, inspection, diagnostic checking, and maintenance of the fire apparatus and its systems and components in accordance with this document, the manufacturer’s recommendations, local experience, and operating conditions.
Vehicle Maintenance Requirements

Requirements of NFPA 1911

- 4.5.4 An operational check and visual check of the fire apparatus shall be performed on a daily/weekly basis to ensure the operational readiness of the unit.

- 4.5.4.1 Defined systems of the apparatus shall be checked, including the fire pump, aerial device, warning lights, audible warning devices, cab and pump panel instrumentation, seat belts, tires, engine, transmission, drivetrain, and brake system.

- 4.5.4.2 An inspection form shall be utilized to record the results of the operational and visual check. *(See Annex C.)*
Vehicle Maintenance Requirements

Requirements of NFPA 1911

- 4.5.5* A complete inspection and diagnostic check of the fire apparatus shall be conducted at least as frequently as recommended by the apparatus manufacturer or once per year, whichever comes first.
- 4.5.6 Component inspections shall be performed at least as frequently as recommended by the manufacturer and when the fire apparatus or any component is suspected or reported to have defects or deficiencies.
- 4.5.7 All deficiencies found during an inspection shall be repaired or corrected by a qualified person.
Vehicle Maintenance Requirements

Requirements of NFPA 1911

- 7.12 Braking System.
- 7.12.1* The braking system shall be inspected and maintained in accordance with the manufacturer’s severe service recommendation. If no severe service recommendation exists, the shortest interval recommended by the braking system manufacturer, based on time or mileage, shall be followed.
- 7.12.2 The parking brake shall be inspected for structural integrity, security of mounting, missing or broken parts, and wear and shall be diagnostically checked.
- 7.12.3 The parking brake controls and activating mechanism shall be inspected for structural integrity, security of mounting, and missing or broken parts, and shall be diagnostically checked, and shall be lubricated.
Vehicle Maintenance Requirements

Requirements of NFPA 1911

- 7.12.4 The brake linings shall be replaced in accordance with the brake manufacturer’s severe service recommendation when they are contaminated, when the lining is worn to the minimum thickness for safe operation as defined by the brake manufacturer, or when the brake drum or rotor is replaced.

- 7.12.6 Machining of brake drums or rotors shall be done only in accordance with manufacturer’s recommendations.

- 7.12.7 All components of the braking system shall be inspected for damage and wear when performing a brake overhaul.
Requirements of NFPA 1911

7.12.5 The drums or rotors shall be inspected during scheduled maintenance, when there is a suspected problem, or at the time of brake lining replacement, and the inspection shall consist of, but not be limited to, the following:

- (1) Evidence of extensive heat or heat cracking
- (2) Out of round
- (3) Wear beyond manufacturer’s specifications
- (4) Rust
- (5) Taper
- (6) Rotor parallelism
- (7) Metal fatigue
Vehicle Maintenance Requirements

Requirements of NFPA 1911

• Additional requirements are in place for anti-lock brakes, and a host of other maintenance items
Relevance to the Moorhead Fire Department

The Moorhead Fire Department is in a crossroads of convergent factors that has caused us to examine our vehicle repair and maintenance practices. We are faced with serious budget cuts that will force us to change the way we do business. One such change that appears likely is the assumption of preventative maintenance functions by shift personnel versus outside contractors. One of our Assistant Chiefs is in charge of the process and is researching the NFPA codes we are discussing this week.

Daily and weekly vehicle checks are currently being performed by shift personnel, but have remained mostly unchanged in fifteen years. It is well past time to review and update these practices.

We have purchased a new comprehensive records management system including a module for vehicle repair and maintenance.

We know that we will be changing how we operate, and wish to be in compliance with applicable national standards, rules and regulations when we finalize and implement the plan.
Ohio Association of Emergency Vehicle Technicians, Inc.
A Chapter of the International Association of Emergency Vehicle Technicians

- Provides “Training” and a voice for EVTs
- Holds several training sessions across the State
- Does not “Certify”
Moorhead should require certification for all vehicle maintenance technicians.
The Maintenance Process

• Provides “Certification” of EVT
• Holds several tests across the country
• Must register 21 days in advance for exams
• 5 year certification
• One time $20 Fee
## The Maintenance Process

### CERTIFICATION TRACKS

<table>
<thead>
<tr>
<th>ASE Exams:</th>
<th>EVT Exam:</th>
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<tbody>
<tr>
<td>T4 Truck, Brakes</td>
<td>F2 Design &amp; Performance Standards and Preventive Maintenance of Fire Apparatus</td>
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<tr>
<td>T5 Truck, Suspension and Steering</td>
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<td>T8, PM1</td>
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**Level II**

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<th>ASE Exams:</th>
<th>EVT Exams:</th>
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<tr>
<td>T3 Truck, Drive Train</td>
<td>F3 Fire Pumps &amp; Accessories</td>
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<td>T6 Truck, Electrical Systems</td>
<td>F4 Fire Apparatus Electrical Systems</td>
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<td>T2 Truck, Diesel Engines</td>
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**Master Level III**

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<td>T1 Truck, Gasoline Engines</td>
<td>F5 Aerial Fire Apparatus</td>
</tr>
<tr>
<td>T-7 Heating and Air Conditioning</td>
<td>F6 Allison Automatic Transmissions</td>
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</table>
The Maintenance Process

REFERENCE MATERIALS PROVIDED

Exams and Preparation

FIRE APPARATUS TECHNICIAN EXAMS

F2 Design & Performance Standards and Preventive Maintenance of Fire Apparatus

- This exam covers the standards for fire apparatus as described in NFPA 1901, Standard for Automotive Fire Apparatus, and in NFPA 1911, Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus.

F2 Reference Material List and Learning Objectives

F3 Fire Pumps and Accessories

- This exam covers the standards as described in NFPA 1901, Standard for Automotive Fire Apparatus in NFPA 1911, Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus.
## The Maintenance Process

### SAMPLE LEARNING OBJECTIVES

F-2 Design & Performance Standards and Preventive Maintenance of Fire Apparatus  
February 2009

Reference Material: Note: Exam may contain "accepted practice" type questions not found in the reference material listed below.

- *Pumping Apparatus DRIVER/OPERATOR Handbook*, International Fire Service Training Association (IFSTA) Chapters 3, 4, 6, 10, 11, 16, Glossary & Appendix A. To order, call (800) 654-4055 or www.ifsta.org

**LEARNING OBJECTIVES FOR THE F-2 EXAM**

1. **Definitions**: The Fire Apparatus Technician shall define the terms and phrases commonly used in connection with fire apparatus, apparatus operations and/or testing of apparatus to include the following:

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>a. Acceptance tests</td>
<td>t. Net pump pressure</td>
</tr>
<tr>
<td>b. Fire pump</td>
<td>u. No load governed speed</td>
</tr>
<tr>
<td>c. Fire apparatus</td>
<td>v. Pressure relief device</td>
</tr>
<tr>
<td>d. Angle of approach</td>
<td>w. Relay pumping</td>
</tr>
<tr>
<td>e. Angle of departure</td>
<td>x. Static water supply</td>
</tr>
<tr>
<td>f. Authority having jurisdiction</td>
<td>y. Cavitation</td>
</tr>
<tr>
<td>g. Heat exchanger</td>
<td>z. Initial attack fire apparatus</td>
</tr>
<tr>
<td>h. Auxiliary braking systems</td>
<td>aa. Class &quot;A&quot; foam</td>
</tr>
<tr>
<td>i. Breakaway couplings</td>
<td>bb. Split Shaft PTO</td>
</tr>
<tr>
<td>j. Quick couplings</td>
<td>cc. Net pump discharge pressure</td>
</tr>
<tr>
<td>k. Quick connect</td>
<td>dd. Gross axle weight (GAWR)</td>
</tr>
<tr>
<td>l. Quick connect</td>
<td>ee. Gross combination weight (GCWR)</td>
</tr>
<tr>
<td>m. Quick connect</td>
<td>ff. Eductor</td>
</tr>
<tr>
<td>n. Quick connect</td>
<td>gg. Intake relief valve</td>
</tr>
<tr>
<td>o. Quick connect</td>
<td>hh. Ground clearance</td>
</tr>
<tr>
<td>p. Quick connect</td>
<td>ii. Combination Fire Apparatus</td>
</tr>
<tr>
<td>q. Quick connect</td>
<td>jj. Preventive Maintenance</td>
</tr>
</tbody>
</table>
The Maintenance Process

- Minnesota has no such organization
- Minnesota has no specific legal requirements for EVT's
- The Authority Having Jurisdiction has sole authority in determining needs
A commercial fire truck repair company in Minnesota

Job Requirements: trade school & experience, personal tools, DOT Certified, current CDL. Pre-employment physical and drug screen required.
The Maintenance Process

- Minnesota has no such organization
- Minnesota has no specific legal requirements for EVTs
- The Authority Having Jurisdiction has sole authority in determining needs
The Maintenance Process

- No certifications necessary for City Mechanics
- Background in commercial, truck or industrial mechanics required
- One technician currently has “some” A.S.E. certifications from a previous employer
The Maintenance Process

- Currently researching possibilities of assuming preventative maintenance duties with fire staff
- Budget cuts may force the issue
- 3 truck mechanics currently employed, one previously D.O.T. Certified bus mechanic
- Will likely require D.O.T. certification of mechanic and vehicles
Relevance to the Moorhead Fire Department

One element of our expected operational change is the assumption of preventative maintenance by shift personnel. We expect to absorb some corrective maintenance functions as well. Both will likely occur under the direction of a Fire Department Mechanic.

We will likely be requiring that mechanic to become D.O.T. certified as well as conducting D.O.T. inspections of our fire apparatus. Neither of thee are required, but will demonstrate competence and help insure the safety of our staff and those we are sworn to protect.

I would not be surprised if we choose to selected certifications through the International Association of Emergency Vehicle Technicians as well.

Perhaps a grass roots effort by our personnel, those of the neighboring Fargo Fire Department and others in our area could lead to the formation of a local chapter of the IAEVT to assist our mechanics with training, education and the forwarding of their profession.
The Moorhead Fire Department needs to adopt a comprehensive formal process for processing maintenance requests.

www.moorheadfire.com

(Learning Point 3)
On July 15, 2002, the firefighters were assigned to Station 13, 309 Arcadia Avenue, and at 5:55 pm they were dispatched for an alarm drop.

They responded on Aerial Truck XL-33, a 1992 Simon-Duplex Ladder. The truck traveled westbound on Arcadia Avenue and began a decent downhill as they approached the intersection of North High Street.

Driver Andy Trott applied the brakes, which did not respond. All four firefighters were injured in the crash of the aerial through the exterior wall of Patrick J’s Grill.
There have been press reports that the aerial was a replacement truck, that had been sent to Maintenance for repair of the brakes, but had been mistakenly returned to service before repairs were actually made.

The truck sat for 13 days at Maintenance without having its brakes repaired.

Maintenance records on the 10-year-old truck showed a six-year history of brake problems.
The Maintenance Process

A majority of equipment repairs are completed by Moorhead Fire Department Personnel.

Many vehicle repairs are conducted by Department personnel, some by the City Shop, other by outside vendors.

ALL repairs and maintenance are coordinated by MFD Personnel.

NO POLICIES EXIST that outline a particular process to utilize when reporting or processing maintenance requests.

www.moorheadfire.com
The Maintenance Process

We maintain an intranet site to communicate important Department information.

Employees are expected to review the “What’s New” tab on a daily basis.
The Maintenance Process

We are expected to post equipment repair and maintenance items on this tab as they are reported and addressed.

This does not happen consistently.
The Maintenance Process

Red tags are provided to affix to equipment in need of repair. Items needing repair are generally placed on a particular work bench at each fire station.

Equipment that cannot be removed from an apparatus generally has red tags affixed to the equipment itself or the controls that operate it.

www.moorheadfire.com
The Maintenance Process

A separate tab is provided to list vehicle repairs needed and to document the work completed.

One Assistant Chief is in charge of this process.

E-mails are sent to all officers when a new entry occurs on this tab.

Consistency is an issue here as well.
Relevance to the Moorhead Fire Department

The existing system that is in place for equipment and vehicle repairs does not work. There is no policy language, no consistency and no accountability. This has led to extended periods of time for equipment and vehicles to be repaired and has even left broken equipment in-service.

The new software we have purchased will be the springboard for us to develop new policy language and place a new system in operation to address these problems.

New World Systems will be conducting “build Team” meeting in April to begin setting up our databases, work flows, and administrative procedures to begin using the software.

Before the year is out, this will be one of several problems addressed by this software and the resulting processes that are developed.
Other Braking Incidents

Accidents involving bad brakes have been happening for years.

(Learning Point 4)
A four-vehicle accident in Buxton involving a Buxton Fire Department ladder truck and ambulance and two civilian pickup trucks was caused by brake failure on the firetruck, Maine State Police said.

The collision occurred at 8:55 a.m. Thursday, when the ladder truck collided with the ambulance at Route 202 and Portland Road while both were responding to a structure fire on Long Plains Road. The ambulance then hit a Dodge pickup truck and continued on to hit a Ford pickup.

Terry Huntley of Buxton, the driver of the Dodge pickup, said Friday she was sitting at a red light when she saw the two emergency vehicles collide head-on and then both move in her direction. Huntley, who was driving her husband's vehicle, said the large pickup saved her life.

"It was absolutely terrifying," Huntley said. "Knowing they were headed my way and knowing I was going to be involved, I had to pray to God that it wasn't my time. I feel very blessed."
Faulty Brake Line Caused Maine Fire Truck Crash

Following the accident, state police were called in to inspect the ladder truck. Trooper Christopher Cyr of the commercial vehicle enforcement unit determined the air line to the rear brakes had failed, state police said. The truck is a 1978 American-LaFrance, previously owned by the Saco Fire Department.

Andrew Stevenson, 27, of Acton was driving the ladder truck. Christopher Swenson, 21, of Buxton was driving the ambulance.

Lisa Lewis, 32, of Waterboro was behind the wheel of the other pickup. All four drivers were transported to the hospital, treated and released.

Pulsoni said Buxton police are continuing to investigate the accident.
CRAWFORD COUNTY, Ga. — Faulty brakes led to a serious wreck Monday afternoon when a Crawford County fire truck overturned. About 3:20 p.m., volunteer firefighter Jonathan Lee Brady, 21, of Lizella, was responding to a grass fire when his brakes failed at the intersection of Ga. 42 and Marshall Mill Road, Georgia State Patrol Sgt. M.A. Rogers said. When Brady couldn't stop, he was hit by a Servpro van driven by Richie A. Sokinas, 28, of Perry, Rogers said.

The force of the impact overturned the 1982 firetruck and broke off the front axle, Rogers said. Brady, Sokinas and his passenger, Anthony Thornton, 21, of Warner Robins, were all taken by ambulance to The Medical Center of Central Georgia with what did not appear to be life-threatening injuries, Rogers said.

The Georgia State Patrol is investigating the accident.
KANSAS CITY, Mo. -- Firefighters are mourning the loss of one of their own after a pumper truck collided with two cars Sunday evening.

The Fire Department said acting fire Capt. Gerald K. McGowan (pictured, left), 57, was killed. McGowan was a 30-year veteran, KMBC reported.

Authorities said that the fire crew was on their way to a call. They were headed south on Blue Ridge Boulevard when a stopped car turned left just as the fire truck was going around it. Witnesses said the fire truck swerved, bounced off the car and hit a maroon car head-on that was yielding to the sirens.
"It's just a tragic, unfortunate accident. Nobody intended for this to happen," Sgt. Randy Sims said.

KMBC's Emily Aylward reported the pumper truck was crushed up against a tree. Some of its speed was broken by a utility pole, which was cut in half.

"That truck was coming right at me," David Whittington said. Whittington said he was standing in his front yard and heard the sirens. He said he missed getting hit by just a few feet, and jumped out of the way. He then went to wreck and tried to help out.
"This one firefighter was trying and trying to help ... compressing, working on him. But he wasn't getting anywhere," Whitington said.

McGowan did not make it. Another firefighter was seriously hurt. Aylward reported that two other firefighters in the fire truck went to hospitals as well.

The driver that was hit head-on suffered critical injuries.

The investigation into the accident continues.
A police report, obtained by The Kansas City Star on Wednesday, said the truck's brakes were "out of adjustment" and that the 35,400-pound pumper could have stopped 70 feet before hitting the tree if they had worked properly.

Assistant city attorney Alan Holtkamp told The Star that the Kansas City fire department expected to be involved in litigation because of the accident, so the city would not allow employees or officials to comment on the report. Representatives at the Fire Department did not return messages left by The Associated Press late Wednesday night.

The Fire Department has said it has two employees who perform most repairs, but some work such as transmission and brake jobs, is done by outside shops.
Other Braking Incidents

Report: Fire Truck In Fatal Wreck Had Bad Brakes


This is not the first time questions have arisen about maintenance of Kansas City Fire Department vehicles.

City Auditor Mark Funkhouser warned in a 1991 report that there wasn't adequate preventive maintenance and vehicles were too old. A 1995 audit found that little had changed.

In 1996, so many of the Fire Department's aerial trucks had mechanical and safety problems that the department used a 30-year-old truck that had been mothballed.
Other Braking Incidents

Career Fire Chief Dies After Being Struck by a Fire Truck at a Motor-Vehicle Incident - Kansas

On April 11, 2002, a 61-year-old male career Fire Chief (the victim), providing mutual aid at a scene of a motor vehicle incident, died after being struck by a fire truck. A 26-year-old male volunteer Fire Chief (the driver) from another department lost control of the fire truck after his brakes failed as he was arriving on the scene. The driver received injuries and was transported by ambulance to a regional hospital where he was hospitalized and then discharged the following day. The victim was transported by ambulance to a regional hospital where he was pronounced dead.
Other Braking Incidents

Truck 301 was traveling southbound on the road where the original motor vehicle incident had occurred.

The driver reported that his speed was approximately 62 mph as the truck crested a hill.

The driver attempted to apply his brakes; however, the brake pedal went to the floor and had no effect in slowing the truck.
While the driver was attempting to stop the truck, he steered it into the northbound (left) lane and drove past the police vehicle and sheriff patrolman. After cresting the hill he placed the truck into neutral gear, began pumping the brakes, and activated the electric parking brake.

While the truck was traveling down the hill toward the incident scene, the driver called on the radio that his brakes were not working.

As the truck was traveling down the hill, the wailing sound of the tires on the roadway caused the Captains and the Lieutenant to look up and see the truck approaching. A civilian in a second SUV that had been traveling southbound in front of Truck 301 was attempting to go around the overturned SUV and trailer in the roadway where the victim, the Captains, and the Lieutenant were standing. As Truck 301 drew nearer, both of the Captains reported seeing the driver waving his hands back and forth.
As Truck 301 approached them, the victim and the Captain tried to get out of the way. The Captain ran east into the northbound lane. The victim headed west into the southbound lane. Truck 301 struck the victim then struck the back of the second SUV that was going around the overturned SUV and trailer. The second SUV then struck the side of Rescue 1 and overturned onto its side. Truck 301 traveled off the west side of the road into a ditch and slid sideways before rolling over and ejecting the driver and dislodging the 500-gallon water tank from the truck.

The Lieutenant yelled to his crew that the victim had been struck. The crew from Rescue 1 descended down the west-side embankment to a ditch where the victim was lying facedown. A paramedic on the scene assisted and detected a faint pulse. A Captain with Rescue 1 assisted with resuscitation efforts in the ambulance while transporting the victim to a local hospital. The victim arrived at the hospital at approximately 1104 hours and was pronounced dead at 1309 hours. The driver was transported by ambulance to a local hospital where he was hospitalized and then discharged the following day.
The Moorhead Fire Department is at risk for just such a breaking failure accident as these.

There is no established routine maintenance program to check mechanical breaking components.

Currently, we rely on annual vehicle checks and reports from Driver/Operators to indicate problems. This is unacceptable.

The routine maintenance program being developed by one of our Assistant Chiefs must and will address the required type and frequency of braking system checks to ensure reliable safe operation of our vehicles.
A systematic process needs to be implemented to address apparatus maintenance needs.

(Learning Point 5)
What I Would do as Commissioner of the Boston Fire Department
Boston Fire Apparatus Maintenance

A Dual Approach

Path A – Immediate Action
• Evaluation of all apparatus and repair of critical items.
  – Reserve apparatus critical items operational before use
  – All front line apparatus checked
  – Schedule of front line versus reserve apparatus checks based upon schedule availability, and reserve apparatus need.
  – Estimate 30-60 days to complete?
Boston Fire Apparatus Maintenance

A Dual Approach

Path B – Comprehensive Review

www.boston.com
Boston Fire Apparatus Maintenance

Comprehensive Planning following a standardized process

- Evaluation
- Identify problems and objectives
- Identify potential solutions
- Develop a plan
- Implement
- Monitor
- Review/Evaluate
Boston Fire Apparatus Maintenance

EVALUATION

• Interview cross sample of department personnel
• Interview all drivers
• Interview all mechanics
• Review maintenance records
• Review laws, standards and manufacturers recommendations
EVALUATION

- Interview industry experts in emergency vehicle maintenance
- Review practices in similar but unrelated industries
- Review practices in other Fire Departments of similar size
- Review practices in other countries
IDENTIFY PROBLEMS AND OBJECTIVES

• Assemble a blue ribbon panel to review all findings

• Partner with:
  – Other Fire Departments
  – Other City Departments
  – Federal Agencies
  – Fire Service Professional Groups (including labor union)
  – Industry Experts
Boston Fire Apparatus Maintenance

IDENTIFY PROBLEMS AND OBJECTIVES

• Identify problems with BFD Maintenance, equipment, personnel and/or processes
• Identify expected performance in the industry
• Identify desired performance in the industry
• Identify objectives for BFD
Boston Fire Apparatus Maintenance

IDENTIFY POTENTIAL SOLUTIONS

- Brainstorm action items, policies, purchases, training, etc. needed
  - ...from blue ribbon panel
  - ...from Union
  - ...from Department administration
  - ...from City administration
DEVELOP A PLAN

- A Planning Committee with a small cross sampling of panel members, heavy emphasis on Department and City Administration
- Approval from Blue Ribbon Panel
- Approval from Labor, Administration, City Legislation
IMPLEMENT PLAN

• Develop a working group of key stakeholders to implement the plan
  – Model policy language
  – Model procedures
  – Equipment purchases
  – Training and Education
Boston Fire Apparatus Maintenance

MONITOR THE PLAN

- Key BFD Personnel
- Tracking Bechmarks and performance data
- Report back quarterly to Blue Ribbon Panel
Review progress and findings at intervals identified in the plan
Annual reviews for first five years by the Blue Ribbon Panel
Annual reviews thereafter by BFD personnel
Relevance as Commissioner

I see three problems here:

1. Immediately dangerous vehicle conditions
2. A lack of effective, comprehensive periodic preventative maintenance checks of vehicles
3. A larger problem or set of problems that is working to prevent a comprehensive and effective overall vehicle maintenance program.

Problem 1 is immediate, and must be dealt with as the highest of priorities.

Problem 2 requires that a thorough check of all apparatus and resultant repairs occurs in a timely fashion.

Problem 3 requires careful research, thought, planning and implementation to be successful.

I believe that problem 3 is not one that is held by the Boston Fire Department alone, but is shared by a large number, if not majority of fire service organizations in our country.
Relevance as Commissioner

The challenges faced by the current conditions in Boston, can serve to establish the framework for a model apparatus repair and maintenance program for Departments across the country.

The momentum provided by the tragic loss of a Lieutenant here should not be wasted, when so much can be accomplished by it. That is why I propose a study of the problem by the Fire Service as a whole to address this greater problem in our fire service society that affects so many of our personnel.

This will certainly add to the costs, effort, and time necessary to address the systemic problems within the Boston Fire Department, but will multiply by many fold, the effects the program will have upon its completion. It will also honor the memory of Lt. Kelly and serve to prevent future such tragedies from occurring.
Relevance to the Moorhead Fire Department

The fire truck in the building could just as likely have the word “Moorhead” on the side as it does “Boston.” The illustrations and lessons learned from this tragedy serve to further illustrate our need to establish a systematic process of routine maintenance founded in national standards and local policy, and backed by the commitment of our staff and Officers to protect those that ride in the apparatus, and those that may come into contact with us.

I believe the program mentioned in earlier learning points that we are developing will do just that.
Learning Point Three

It is the responsibility of the Fire Officer and the Apparatus Operator to assure their apparatus is mechanically ready for a response.
The Fire and Rescue Department will provide the best possible apparatus to its employees; however, at times it may fail. When accidents, failure or suspected failure occurs these items apply:

Notify the Duty Chief immediately when an accident occurs. (See Communications Policy under “Disabled Unit”.)

When transferring apparatus for any reason, change the: Accountability Passports, Cell Phone, 800 Portable Radio, Garage Door Opener and Vehicle Number Placards. This equipment is to be switched whenever vehicles are switched to your replacement rig, return the spare set to your original rig.

If an apparatus is suspected to be, or needs to be, placed OOS (Out of Service) the Officer, or Senior member, will have the option to remove it from service for the following reasons:

- A failure of the brake system that results in the vehicle being difficult or impossible to stop.
- No audible siren for response use.
- Severe body damage, which hampers the safe operation of the vehicle.
- A flat tire; tire problem; rim; etc.
- Major electrical problem involving major components, battery, alternator or any other electrical device which keeps it from starting, or causes a drain on the system.
- A failure in the windshield wiper system in inclement weather.
- A failure in the headlights, (brake and tail) to operate in darkness.
• An inability to engage or operate the fire pump.
• A failure in the hydraulic system or other component that prevents the operation of the aerial device.
• A failure in the power steering system.
• A failure in the coolant system that causes the engine to overheat.
• A failure in the HVAC system, in the patient compartment, during periods of extreme temperatures.
• Failure in the radio communications that cannot be immediately corrected by portables, repairs or replacements.
• Any defect that, if not immediately corrected, would cause failure or damage to the apparatus, equipment or vehicle, or would endanger the lives of the general public or personnel to the vehicle.

The vehicle should be tagged to the steering wheel or near where easily found with the (OOS) Out of Service tag supplied.

Notification shall first be made to the Support Division Chief based on availability. Second attempt is to call the Mechanic on call which may be updated on the Outlook® calendar or posted within the BC office. Call Mechanics at their residence and/or page them according to the call schedule. If a schedule is not available begin with:

Bob xxxx  xxx-xxxx Home  xxx-xxxx Cell
Don xxxx  xxx-xxxx Home  xxx-xxxx Cell
Jeff xxxx  xxx-xxxx Home  xxx-xxxx Cell
We have a written policy that addresses how to remove a vehicle from service and also outlines some reasons for removing a vehicle from service. It is ultimately the responsibility of the officer and apparatus operator to remove a vehicle from service if there is any question in regards to safety and operations. Vehicles that are place out of service are identified with a tag that attached to the steering wheel making it easy to identify. The tag cannot be removed until a final check of the apparatus has been completed by maintenance.
I was impressed with the policy that Robert’s Department has on repairs and maintenance.

It is shameful that we do not have a written policy of any type on file to deal with equipment and vehicle repairs.

In an effort to fast-track having such a necessary policy in place, I will see if Robert will share his Department’s policy with me to use as a base for one of our own.
Learning Point # 2:

"The EVT Certification Commission, Inc. is a nonprofit corporation dedicated to improving the quality of emergency vehicle service and repair throughout the United States and Canada by means of a certification program that will provide technicians recognition for the education, training, and experience they have in the service and repair of emergency vehicles."

Courtesy of Darren Collins

Source: www.oaevt.org/photos.htm
“The Fire Apparatus Technician Certification track is for those technicians who service and maintain fire department pumpers, squads, aerial devices, tankers, wildland apparatus, etc. This track has three (3) levels of certification. Each level requires specific EVT exams and ASE heavy-duty truck exams. The Fire Apparatus Track exams cover the design and performance standards, specialized systems and equipment, and accepted practices used in the service and maintenance of fire apparatus.”
Learning Point # 2 (cont.)

FIRE APPARATUS TECHNICIAN LEVEL REQUIREMENTS

Level I
ASE Exams:
T4 Truck, Brakes
T5 Truck, Suspension and Steering
T8, PM1
EVT Exam:
F2 Design & Performance Standards and Preventive Maintenance of Fire Apparatus

Level II
ASE Exams:
T3 Truck, Drive Train
T6 Truck, Electrical Systems
T2 Truck, Diesel Engines
EVT Exams:
F3 Fire Pumps & Accessories
F4 Fire Apparatus Electrical Systems

Master Level III
ASE Exams:
T1 Truck, Gasoline Engines
T-7 Heating and Air Conditioning
EVT Exams:
F5 Aerial Fire Apparatus
F6 Allison Automatic Transmissions
Our city’s fleet division is ASE certified, after speaking with a member of fleet he provided no indication of specific EVT training of fleet personnel. Our shift mechanic that covers major apparatus is not EVT certified, however the apparatus is on a scheduled preventative maintenance program. Any repairs beyond the capabilities of the city are sent out for repair(s) by qualified service personnel/company.

Source: City of Lakewood webpage
Relevance to the Moorhead Fire Department

I appreciated Darren’s approach to the maintenance technician learning point. His presentations are polished and ready for professional delivery.

I like the fact that his City’s fleet division mechanics are A.S.E. certified. I wish our City was as progressive in their approach. A.S.E. certification will not be coming to the City of Moorhead’s fleet at any time in the near future.

I think it may be possible to obtain A.S.E. certification for one of our staff members who works part time as a mechanic. The I.A.E.V.T. provides dome real opportunities for us. Our progressive stance may trickle back to the rest of the City.