INTERNATIONAL ASSOCIATION OF FIRE FIGHTERS ®
HAROLD A. SCHAITBERGER
General President
EDWARD A. KELLY
General Secretary-Treasurer

iWomen: Apparatus Safety for women

Campaign to Reducing Female Fire Fighter and EMS Deaths and Injuries

According to the National Fire Protection Association (NFPA), the annual average of paid women in the fire service is 11,000; making up 3.8% of the approximately 300,000 active paid fire fighters.[1] Women may make up a small percentage of active fire fighters, but they face the same risks of death and injury from apparatus operations.

In 2015, NFPA estimated there were 16,600 collisions involving fire department emergency vehicles responding to or returning from incidents. This is the highest number of collisions since NFPA began collecting this information in 1990,[2] and fire fighters are more likely to die in a motor vehicle accident than during the course of firefighting operations. Vehicle related deaths account for 20%-25% of all fire service fatalities, which is the second leading cause of death for fire fighters behind cardiac- related causes.[3] Apparatus accidents may account for only a small percentage of injuries, but when they do happen they result in more serious outcomes.[3]

Many factors play into an apparatus accident, but through case studies and research, there are five common themes; lack of seatbelts, lack of apparatus maintenance, excessive speed and loss of control, apparatus operation and distractions, and intersections.

Seatbelts

Statistically more than 80% of fire fighters killed in collisions are not wearing seatbelts.[4] When fire fighters do not wear their seatbelts, ejection from the apparatus become frequent since nothing is counteracting the force of the accident. Research shows that 3 out of 4 people who are ejected from an apparatus will die, and 8 out of 10 fatalities from a roll over crash involve occupant ejection.[3] Wearing a seatbelt while in an apparatus could ultimately be the determining factor in whether or not a fire fighter survives a crash, but despite these statistics, seatbelts are still not being worn. The common complaint is that seatbelts are restrictive or uncomfortable to wear over their PPE. This has resulted in some vehicles where the seatbelts are removed or tucked away beneath the seat cushions.

NFPA 1500 has required all riders on fire apparatus to be seated and belted prior to the movement of the apparatus. But considering many are not abiding, a “seated and belted” policy should be enforced to ensure the safety of all fire fighters, and this responsibility falls on the operator. Ways to enforce seatbelt use are to have high visibility seatbelts or monitors that send a signal if belts are not buckled. Ultimately the operator must enforce that all fire fighters must have their seatbelts on before the apparatus moves.

Lack of Apparatus Maintenance

Sometimes apparatus accidents are not a result of the driver, but because maintenance is neglected. Apparatus that is not properly maintained can negate the safest driving

practices. Leaking fluid, breaking or steering defects, inoperable wiper blades, and poor tire conditions can all result in apparatus accidents. Additional problems that may appear to be small such as broken door latches and missing or inoperable seatbelts can contribute to injury and/or death. Apparatus with any of these problems should be removed from operations until repairs are made.

When it comes to Apparatus Maintenance, it is important that a program is created to meet the requirements of NFPA 1915. Drivers should perform operational safety inspections every day before their tour of duty. If there is a minor problem, they should attempt to correct it. If there is a large problem, then the operator must notify their supervisor. Defective apparatus' must not remain in service, and it is important to not let a small problem like a broken door latch to continue without repair. All maintenance problems, both small and large, must be resolved before an apparatus can return to operation.

Excessive Speed and Loss of Control

Approximately 2/3 of fire apparatus crashes happen while in route to an emergency situation.[5] There are many factors that play into that result, but ultimately excessive speed results in loss of control of the apparatus. There is a direct correlation between excessive speed and decreased safety when operating any vehicle, especially during curves, passing vehicles and inclement weather.[3] The use of lights and sirens can also cause *Siren Syndrome* where drivers tend to drive faster and more aggressively because they are operating under emergency conditions.[3]

To lower the risk around excessive speed it is important for operators to understand that adding 10 seconds to a call is better than an accident. Apparatus should not exceed the speed limit, and it is acceptable to tell a driver to slow down, but never acceptable to tell them to speed up. Also, since many accidents happen when apparatus wheels leave the road, it is recommended that operators stop the apparatus completely before creeping back onto the road. To combat *Siren Syndrome*, some fire departments have created policies where different calls require different responses; low risks means no lights or sounds, high risks require both and medium risks may have just lights but no sirens. St. Louis, Virginia Beach, Salt Lake City and Phoenix have implemented "on the quiet" responses where they don't use lights or sounds for certain calls. They have all observed drastic reductions on collisions, but no reduction in service delivery, higher fire loses or reduced patient care/mortality rates.[3]

Apparatus Operation and Distractions

Many apparatus accidents are a result of drivers being distracted or not trained on a specific apparatus. There are many distractions today between cell phones, computers, maps and radios, and they are all leading to an increase in accidents because they divert the driver's eyes, hands and focus away from the road.[3] In addition to distractions, drivers may be undertrained on an apparatus or not qualified to drive a specific vehicle. Switching to a different size vehicle, or limited familiarity with a specific vehicle can result in more collisions when driving to and from a call, or backing up at a site or at the station.

Distractions are hard to ignore, but to lower that risk a second person should operate all devices, that way the driver can focus solely on the road and navigating traffic. Apparatus operation is difficult, so it is recommended that departments follow NFPA 1002, which states all drivers must complete a formal training program on the exact types of apparatus they will drive. If they are not thoroughly trained they must not operate the vehicle. It has also been suggested to make it a requirement that drivers should obtain a commercial driver's license (CDL) and have a formal training with ample practice time. Backing up an apparatus is another operational concern, but best practices are to follow NFPA 1500 and create a backing policy- one that addresses if the driver cannot see the spotters than they must not back up the vehicle.

Intersections

The most likely location for a fire apparatus collision is at an intersection.[4] This is a result of civilian drivers failing to yield to emergency vehicles when they have a green light or stop sign, or fire fighters not coming to a complete stop before proceeding through a red light or stop sign. Fire fighters often do not come to a complete stop and many do not slow down prior to an intersection either, which has resulted in collisions. These accidents can also be a result of low visibility due to weather, distracted civilian drivers or drivers who do not abide traffic laws and standards.

NFPA 1500 requires the apparatus to be brought to a complete stop before proceeding. A complete stop could extend the response time by two or three seconds per intersection, but adding a few seconds to a call is better than a collision.[3] If it is not possible to completely stop, we recommend the vehicle slow down to a speed where they can stop if necessary and potentially "cover the brake" where the driver keeps a foot on the brake for an abrupt stop. Also, if multiple vehicles are travelling from the same start location to final destination they should follow the same route to reduce the chance of vehicles encountering each other at an intersection.

Recommendations

In order to efficiently and effectively reduce female fire fighters and EMS deaths and injuries, it is important to promote Change in Behavior (New Social Norms), create new NFPA standards/ New Regulations or update NFPA standards, and to push for safer apparatus designs. For the first time we are starting to see a drop in the number of fire fighter collision fatalities, but there is no way of knowing if this is truly a trend. Therefore, apparatus safety should not be a second thought, and it is important to spread this awareness now.

References

1. National Fire Protection Association. *Firefighting Occupations by women and Race- NFPA Statistics.* 2012. http://www.nfpa.org/news-and-research/fire-statistics-and-reports/fire-statistics/the-fire-service/administration/firefighting-occupations-by-women-and-race
2. National Fire Protection Association. *Firefighter Injuries in the United States*. 2015. http://www.nfpa.org/news-and-research/fire-statistics-and-reports/fire-statistics/the-fire-service/fatalities-and-injuries/firefighter-injuries-in-the-united-states
3. United States Fire Administration. *Emergency Vehicle Safety Initiative*. February 2014.
4. International Association of Fire Fighters, Department of Homeland Security and United States Fire Administration. *Emergency Vehicle and Roadway Scene Safety*. 2005. http://www.iaff.org/hs/EVSP/PowerPoint%20Presentation%20in%20PDF.pdf
5. Donoughe J, Whitestone J, Gabler H. Analysis of Firetruck Crashes and Associated Firefighter Injuries in the United States. *Annals of Advances in Automotive Medicine*. October 2012.