Baltimore County Fire Service
Special Interest Bulletin

URoll Stability Control

The purpose and presence of roll stability control systems (RSC) on the Department's apparatus is important not only to every FADO, back-up driver, and company officer in the Department, but to every functioning firefighter in the County as well. We, as emergency responders, can only make a difference after we arrive safely on the scene of an incident.

We rely on and comply with NFPA 1901 when it comes to the requirements for new apparatus. The scope of NFPA 1901 is to, "define the requirements for new automotive fire apparatus and trailers designed to be used under emergency conditions to transport personnel and equipment and to support the suppression of fires and mitigation of other hazardous situations." One of the requirements of this standard, most recently revised in 2009, is to provide vehicular roll stability. The fire service, as a profession, has fallen short in consistently governing the speed of apparatus responding to incidents. Numerous injuries and fatalities to firefighters, EMS personnel, and civilians have occurred over the years and across the country as a result.

Normal apparatus use would require brake and tire replacement after 60,000 miles. The Department has had to replace three sets of rear brakes and two sets of rear tires to date on new engines with 15,000 miles or less on them, a mere 25% of normally anticipated wear. This requires the engines to be taken out of service for repairs for an average of seven to ten days at a cost to the Department in the range of $13-14,000 per vehicle.

All ten of the new Rosenbauer engines the Department now has are equipped with RSC. The RSC is integrated into the vehicles' anti-lock braking systems.

RSC is not designed to replace the driver but to assist the driver. According to the system manufacturer, "RSC continually checks and updates the lateral acceleration of the tractor and compares it to a critical threshold where rollover may occur. When the critical threshold is met, RSC intervenes by reducing engine torque, and engaging the engine retarder, while automatically applying drive axle and trailer brakes. Frequently, activation takes place before the driver is aware of the need." On dry roads, it senses roll conditions by measuring critical lateral acceleration on ramps, in curves, and in turns.

The system responds differently on low-friction surfaces such as those found on wet roads, whether they're covered with rain, snow, or ice. It reduces the drive axle spin to increase traction during acceleration and to maintain vehicle lateral stability and directional control in on-ramp situations. The system will reduce engine torque when the rear axle speeds exceed the steer axle speeds when it activates in avoidance maneuvers and exit ramp situations.

The manufacturer also states, "RSC is automatic. It becomes active when the Electronic Control Unit (ECU) senses conditions that could produce an imminent rollover condition – even if you don't. You will notice a difference in your vehicle when Roll Stability Control is functioning, but you should continue to drive and correct as normal."

What does all this mean to our drivers? The system activates when the vehicle is traveling at speeds of 12 MPH or more. As the engine torque is reduced and the retarder activates, you will sense a decrease in power as the vehicle decelerates. You may also feel the brakes being applied to all wheels or the vehicle may feel like it's hopping. The system is designed to take the power and throttle away from the driver and apply the brakes to stabilize the vehicle and prevent rollovers. FADOs often respond to instability in turns and on ramps by accelerating to counteract the effect of the weight-shifting and lateral forces on the vehicle. RSC-equipped vehicles do the opposite of what you've traditionally been taught in order to stabilize vehicles. Some FADOs are having success by braking in the straight-away approach to a turn and then gliding through the curve instead of accelerating through it to prevent the RSC from activating. Otherwise the FADO may have to let off the accelerator until the vehicle recovers, and then gently accelerate after the RSC deactivates. There will be a learning curve to learn how to handle your apparatus more effectively. It's important to abide by the posted speed limits and take advantage of opportunities to practice driving with the RSC in non-emergency situations.

RSC will become commonplace as the Department purchases additional apparatus equipped with it in the future in compliance with NFPA 1901. By understanding how the system is designed and how it functions, it will reduce the amount of time our first-line apparatus is out of service and save the Department tens to hundreds of thousands of dollars in repair costs. This expense is one that is easily preventable by our FADOs and company officers, a fact that is particularly significant during these lean economic times.

Submitted by FRA Staff

References:
"Stability Enhancement System with ABS: Protection that Pays. Meritor WABCO, 2006."
"Stability Control Driver Tips for Straight Truck and Bus. Meritor WABCO, 2008." "NFPA 1901, Standard for Automotive Fire Apparatus, 2009 Edition."

Motorola Emergency Radio Button

At our latest Joint Safety Meeting, there was discussion regarding our radios and radio system. An important feature of our portable radios is that small orange button that is embedded in the top part of the radio. We have all heard the prompt: "X from Dispatch, check your display and advise." What many of us don't know is, "What actually happens at Dispatch when this happens?"

An immediate audible ***and*** visual alert is received at the Dispatch Center. When the emergency is sent, the communications system grants ***that*** radio what is known as "System Priority Assignment."

Once the radios Push-to-Talk (PTT) switch has been activated, the sending radio and all other radios monitoring the same TG will be assigned a dedicated radio channel for 30 seconds securing its use during the emergency. The user merely presses the PTT for immediate voice access until the sending radio resets the emergency button.

To put it plainly, when the orange button is pressed, the radio has the capability to talk over any other radio that keys up for the next 30 seconds. This would be especially important in the event of a Signal 13, May Day, etc.

After 30 seconds, the radio defaults back to a normal priority and its transmissions will no longer receive first priority.

Radio Discipline Tidbits

Sometimes, we are our own worst enemy! Transmit only pertinent information on the appropriate talk group.

The radio occupies time to “affiliate” with the system when we turn on our portables to listen to a fire ground channel. It can bog down the system and lead to problems when multiple radios do this at the same time. With neighboring jurisdictions now using similar radios, even their radios occupy critical time to “affiliate” with our system when they turn them on to listen to our fireground activities.

So on the next fire box, let’s do ourselves a favor and keep the number of portable radios turned on at each station to an absolute minimum. Remember: You may be on the next fireground depending on your radio!

Submitted by Capt. T. Ramey, Sta. 8-C

SCBA Reminder

One of our most important pieces of equipment-- if not the most important-- is our SCBA. While often taken for granted, our SCBA is vital to keeping us safe while we perform our jobs, and protects us against those insidious lung diseases we as firefighters are more likely to face in the future.

Mastery of using our SCBA requires us to remember the basics: How to put it on, how much air we have, and how to troubleshoot if things go wrong. A quick and easy acronym to help us is: **O MY AIR**.

O- Open your bottle completely. ***Remember that it takes approximately seven turns to open completely.***

M- Make sure your hood protects you. ***The voice emitters we wear now pose a challenge to ensuring this.***

Y- You turn your air on. ***Its too important to let someone else do this for you.***

A- Always check your seal and amount of air.

I- Inspect regularly.

R- Report any worn or damaged parts.

Submitted by Capt. T. Ramey, Sta. 8-C