

Ralph's Accident Reconstruction Newsletter: Volume 9, Number 1—Spring 2010

I hope all of you had a safe and happy holiday season and that your winter was not too severe. It seems that the economy has improved somewhat since a year ago; let's hope the improvements continue through 2010 and beyond.

The converted ambulance has taken me much longer than I anticipated to get it ready to provide me with safe and reliable service. The previous owner had not used it significantly in the last year of his ownership, so there were many items that needed attention due to lack of use, plus some functional improvements. It has been at the mechanical shop, then to the body shop, then to the electrical shop, then to the mechanical shop, then back to the electrical shop, then back to the mechanical shop, then to a different electrical shop, then to an accessory shop, then back to the mechanical shop, then to the body shop again. Perhaps by the time of the next newsletter I'll actually be using it for field work.

One option I had in mind was to have it painted to color-match my Avalanche. However, the body shop I use looked it over carefully and found many small dents and other issues and problems which would have to be repaired or corrected before repainting, resulting in a total estimate of \$20,000 for body work and painting. The paint job will have to wait! Please send me more work!

Toyota's problems have been in the news lately, as I'm sure all of you know. There seem to be at least two distinct issues on two different lines: sticking throttle on Camry and certain other models, and unresponsive brakes, possibly coinciding with throttle problems, on the Prius. As of this writing, I haven't had an occasion to examine any of the recalled Toyotas, for the recall issues or for any other. I did recently examine the brakes on an earlier model Prius, and I found no problem with that car. For those of you who may be driving one of the involved Camry or similar models, and for anyone else who may experience a stuck throttle or other unexpected acceleration, I have some comments and some recommendations.

My comment is that, so far, every case of sudden acceleration I have investigated was caused by the driver's confusing the brake pedal with the throttle pedal. Many of you may recall the Audi 5000 sudden acceleration cases from years (ten or more?) ago. That phenomenon was thoroughly investigated by the National Highway Traffic Safety Administration (NHTSA), which agency found that, in all cases where they were able to investigate properly, the cause of the sudden acceleration was driver error. The current throttle problems with the non-hybrid Toyotas, how-

ever, appear related to failure to return to idle (or some other less than wide-open condition) when the pedal is released. If you ever experience that event in any vehicle, remember that the brakes are more powerful than the engine, BUT ONLY FOR ONE BRAKE APPLICATION. Most power-assisted brakes in cars and light trucks use intake manifold vacuum to provide that power assist. At wide-open throttle (WOT), there is no significant intake manifold vacuum, but there is a check valve in the vacuum line to the brake booster to provide one fully power-assisted stop in the event of loss of intake manifold vacuum for any reason. So apply very firm pressure to the brake pedal, using two feet if you must, but DO NOT PUMP THE BRAKE PEDAL. If you pump the brake pedal, you will exhaust the vacuum reserve, and you probably won't be able to stop the car while in gear at WOT. Bring the vehicle to a controlled stop in a safe location with firm, steady pressure on the brake pedal, then turn the engine off. Don't take too long to get the vehicle stopped, or your brakes will become severely overheated, and you won't be able to stop the vehicle while the engine is running, even with power assist. Once you are stopped in a safe location, turn the engine off and find some means to call a tow truck; don't try to drive it again until the problem has been repaired.

There are, of course, two other alternatives to using the service brake. You can simply turn the engine off. You will lose power assist for your steering, which is hydraulically boosted on virtually every car or light truck, but you won't need that power assist for the small amount of maneuvering necessary to get to a safe place to stop and park. Another alternative is to disengage the transmission—depress the clutch if it's a manual, shift to neutral if it's an automatic. The engines in most late-model vehicles are equipped with rev limiters, to prevent the engine from operating at such a high rpm level that it comes apart. If your engine is not equipped with a rev limiter and you shift to neutral at WOT, the engine will most probably become several hundred pounds of scrap metal, but that's better than becoming involved in a crash that's fatal to you. Would you rather kill your engine or yourself? ☺

Once again, I am sending a newsletter that is all text. I had planned to include at least one photograph of the converted ambulance, but it's still "not ready for prime time." I apologize for not having an interesting photograph or chart to include in this newsletter. I will make every effort to have some interesting graphics in my very next edition.