NEW TECH TARGETS TAILGATERS

USING LIDAR TO SLOW DOWN LIFE IN THE FAST LANE

BY BOB GALVIN

Driving too closely behind another car, or tailgating, has been one of those traffic infractions on U.S. roadways that has defied law enforcement officers for years. After all, if you've written a ticket for a driver who was driving too closely, chances are high the driver took it to court. Lacking hard proof of the tailgating episode, you may have had difficulty proving your case.

Now, however, courtroom showdowns between violators and traffic officers are frequently going in the officers' favor with the advent of a new tool that tags tailgaters with arresting evidence. Lidar (light detection and ranging) technology, which has already proved to be effective in nabbing speeders, can now detect with pinpoint accuracy vehicles that are driving too closely.

This technology breakthrough is good news for both traffic officers and those unwary drivers who can't curb the urge to tailgate. It means officers can now both calculate and document driving too closely, and to share this information with offenders right at the scene.

One company in particular, Laser Technology, Inc. (LTI), in Centennial, Colo., now offers a patented software feature known as DBC (distance-between-cars), for incorporation into its LTI Ultralyte Model 100 laser system. The laser system itself is used for speed enforcement. The added DBC software is designed to measure the distance and/or time between two traveling vehicles in addition to both of their speeds.

PHOTO DALE STOCKTON

Although Lidar is commonly used for speed enforcement, recent developments have made it a valuable tool in determining whether a vehicle is following another vehicle too closely.

More Road Congestion, Fewer Officers

The ability to measure tailgating initially caught the interest of international markets, where governments closely monitor vehicle separation to foster higher traffic safety. In the United States, as "road rage" incidents have grown, law enforcement agencies have become very interested in the ability to measure the travel time and distance between two cars in their attempt to show evidence for enforcement.

According to The National Road Safety Foundation, aggressive driving behaviors, from which road rage evolved, are linked to half of all car crashes. High-risk behaviors include the usual suspects: speeding, running red lights and stop signs, tailgating, frequent lane changes and angry or threatening behavior toward other motorists.

The National Highway Traffic Safety Administration (NHTSA) reports, not surprisingly, that congestion is a contributing cause of aggressive driving. The NHTSA says studies show the number of motor vehicles registered rose 19 percent over the past ten years. But even more alarming is that, at the same time, many areas have cut back the number of officers patrolling.

These gloomy statistics only underscore the need for more efficient

technology to monitor the rise in motorists driving too closely.

Prior to DBC's advent, traffic officers had a hard time enforcing the so-called two-second rule—a safety guideline that tells a defensive driver the *minimum* distance to avoid collision in ideal driving conditions. The rule has proved challenging for law enforcement agencies throughout the world because visual evaluation of vehicle separation distances are inherently subjective, usually relying on the judgment of the traffic officer.

"The real issue is, how much reaction time does a driver (who is following another vehicle too closely) have?" poses John Naccarato, supervisor of Oregon's Clackamas County Sheriff's Office traffic unit. He points out that it should be a second and a half for driver perception, reaction and then hitting the brake to avoid a collision. "If you're closer than that, you don't even have time to react before you smack into somebody," Naccarato said. "The laser (with DBC detection) will tell us how close a driver actually is as opposed to just observing with the naked eye. It takes the subjectivity right out of it."

VASCAR Still Used

Until a few years ago, new technology focused largely on detecting speeding and traffic light law violations. Tailgating documentation tools have been almost non-existent. That said, "VASCAR" (visual average speed computer and recorder) remains a vehicle speed measuring system that some law enforcement agencies continue to use for monitoring motorists driving too closely. Developed in the late 1960s, this system calculates speed using a "stopwatch" clocking method with a simple computer, and it relies on the officer's anticipation of approaching traffic.

VASCAR computes speed from two variables or landmarks (e.g., a utility pole, sign or crosswalk), the distance the target vehicle travels and the time it takes the target vehicle to travel that distance. The officer measures the distance by pushing a button on the VASCAR system when the target vehicle passes the first predetermined point and turning it off when the vehicle passes the second point. Elapsed time is automatically recorded by the computer.

An officer can use instant-time recall to precisely measure gap time between two vehicles to determine if a car is following too closely. Police officers use VASCAR primarily in jurisdictions where radar and/or lidar is not allowed, or to prevent detection by people using radar detectors.

Virginia-based Traffic Safety Systems, Inc. (TSSI) offers its new VASCAR-*plus* IIIc. VASCAR-*plus* computes speed simply by dividing the distance traveled by the elapsed time. According to TSSI, because the unit "measures average speed and requires no depth perception judgments, it is fairer to the driver than other forms of speed measurement."

One advantage of VASCAR over lidar is the fact that you must position laser radar systems close to the road, whereas VASCAR can also operate far from a road. An officer simply needs to observe and monitor vehicles passing between the determined landmarks. However, VASCAR does rely strongly on operator skill and may be more subject to human error.

Lidar Provides More Valid Evidence

Officer Eric Barcello of the Arizona Highway Patrol (AHP) notes that several of his officer colleagues still use VASCAR even though the AHP has now implemented LTI's DBC lasers.

The AHP has used the DBC lasers since 2005 "because the majority of our collisions are minor and involve following too close," Barcello says.

According to Officer Mike Beaudoin, who works with Barcello on traffic enforcement, the DBC laser works quickly. He adds, "Because it's laser, it's target specific."

While VASCAR may take less time for setup on a roadway and is simpler than lidar in functionality, this technology relies heavily on the operator's experience, judgment and anticipation. Says Barcello, "With lidar, you're not dealing with anticipation, but getting actual, physical measurements from the target vehicle. The operator error can come into effect very easily with VASCAR if it isn't used correctly, whereas lidar is going to tell you if it has an error."

LTI's DBC-equipped laser system gives detailed information that benefits both officer and offender. LTI's instrument gives the speed of both vehicles at the time they were zapped with a laser beam, the distance from the lidar's operator to each of the vehicles at the time they were shot with laser, and the distance between the two vehicles measured not only in distance but also in time.

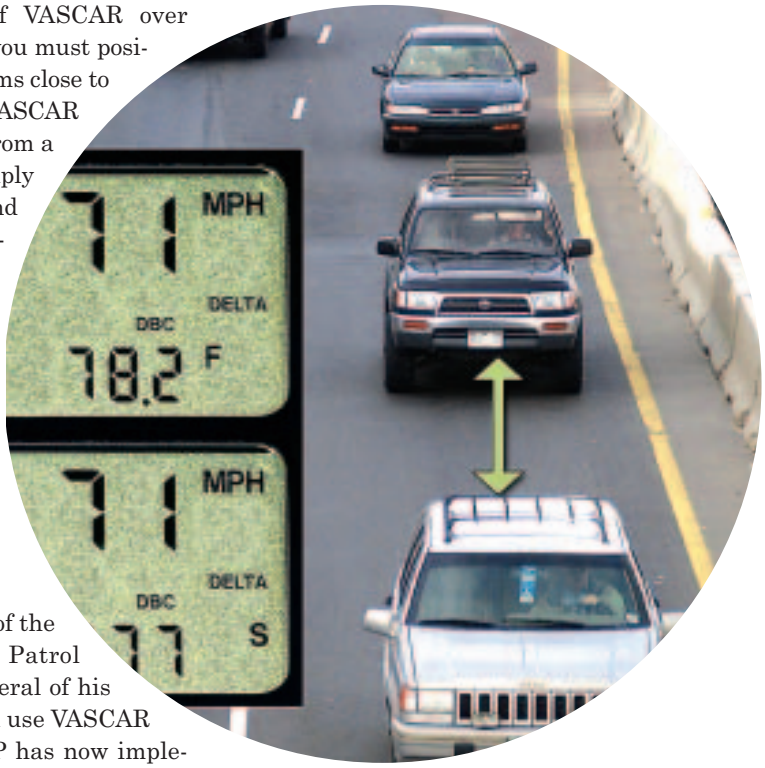


PHOTO BOB GALVIN

Considering the threat of a serious collision or a chain-reaction accident that driving too closely poses, the offender either may not perceive the risk, or they may be tailgating deliberately. All the more reason the DBC laser technology is a welcome solution to a growing problem.

Benefits of Lidar in Heavy Traffic

Using a laser system with DBC built inside takes training, practice and patience, but it becomes easier with time and experience.

The officer sets the laser to measure the distance between himself and the center of a traffic lane. Then, once two cars pass by, the laser tracks the speed of both cars and calculates the distance between them.

Lidar is especially effective when used to track tailgaters in heavy traffic conditions. The laser beam enables the officer to target one violator's vehicle even while that vehicle is traveling in a group of cars.

Carl Fors, president of Texas-based Speed Measurement Laboratories, Inc., notes a significant difference between lidar and radar, which emits high-frequency radio waves.

With radar, the beam is so wide that an officer using it must wait and look for whoever is going too fast. Conversely, with lidar, you can quickly pinpoint the most flagrant tailgaters. This is why lidar is so ideal for use in areas on highways where traffic is heavy.

Kentucky's TACT Program Targets Commercial Vehicles

Driving too closely is not limited to passenger vehicles. Drivers of commercial vehicles also often tailgate.

It's a problem Thad Sullivan, program manager for Kentucky's Ticketing Aggressive Cars and Trucks (TACT) demonstration program, is most familiar with. The program, which runs through 2008 and is funded by the Federal Motor Carrier Safety Administration, is modeled after a similar program that began in Washington state. The program's aim is to find ways to reduce the number of commercial vehicle fatalities and serious injury collisions, to change aggressive driving behavior around these vehicles and then evaluate results.

A major component of the test program is detection of driving too closely. Kentucky statute states that commercial motor vehicles must maintain 250 feet behind like vehicles. Sullivan says the LTI's Ultralyte 100 LR laser system with DBC is able to convert speed to velocity, and because of this capability, "we can determine how far behind these vehicles are from one another or in front of one another, and how close they are in time." Sullivan explains that his team can revisit the state statute and conclude that a commercial truck is, say, traveling 70 mph and, therefore, is less than a second, or a half second, behind another vehicle. "We can argue that this is too close based on the average perception/reaction time for a motorist for a second and a half."

According to Sullivan, the LTI DBC technology has been responsible for making the TACT demonstration program effective. The ability for speed enforcement officers to record vehicle approach angles, offset angles, vehicle type, distance, speed and time is critical to validating driving-too-closely violations.

When violators are stopped and issued a ticket revealing the painful details of their infraction, they also get a quick roadside lesson on how to correct their behavior. Each violator is given a brochure regarding leaving more space around trucks with no-zone diagrams, reason why a truck or car must give more space, and how to make a determination of leaving three seconds (Kentucky's minimum-distance rule) behind another vehicle.

"We're very much into educating the motorist," Sullivan emphasizes, "not just punishing the motorist."

So far, the TACT program has been successful. Sullivan reports there have been double-digit decreases in the amount of collisions in those areas his program's personnel are enforcing. And, he adds, "We're seeing an increase in the amount of distance people keep between cars."

Lidar Evidence Not Yet Widely Accepted

There's no doubt the DBC technology is having a positive impact on aggressive drivers and their penchant for tailgating. "The technology is slam-dunk," claims Naccarato. However, he concedes, "The hardest part is getting each jurisdiction to accept the evidence." Naccarato believes courts dealing with speed-enforcement cases must be educated on the new "DBC enhancement" function that is now being offered for the lidar technology already accepted in the courts.

"There is already extensive case law up through the higher courts adopting lidar as scientific evidence," Naccarato says, but the DBC piece that is now added to the units must still garner acceptance in the courts.

Grant Funding

The cost of equipment such as LTI's Ultralyte 100 LR laser system with the DBC software is not much more than a typical standard laser system. Agencies may be able to obtain federal grant money for the equipment's purchase by applying through their local Department of Transportation. Guidelines for these grants include specifying a certain percentage of grant money to be used for equipment, enforcement and other categories. Contact your respective transportation safety divisions to learn more about grants that cover your statewide traffic safety goals and strategies.

The Bottom Line

The use of lidar technology with the ability to detect motorists driving too closely is a trend that most likely will grow among law enforcement agencies. It's easy to use, target specific and provides the kind of evidence of tailgating that will hold up if challenged. Meanwhile, it will take time to change the behavior of aggressive drivers and their tendency to tailgate. Nevertheless, many police agencies report a dip in this behavior as drivers become more educated about the hazards of driving too closely.

If tailgating violators don't get an education when stopped on a roadway, they'll certainly get one should they head to court. As the AHP's Barcello puts it, "With the laser, you have so many more pieces of information, it is easier for officers to be successful in court." LOM

BOB GALVIN is a freelance writer in Oregon City, Ore., who writes on topics relating to traffic safety and speed enforcement technology. Contact him at rsgpr@msn.com.

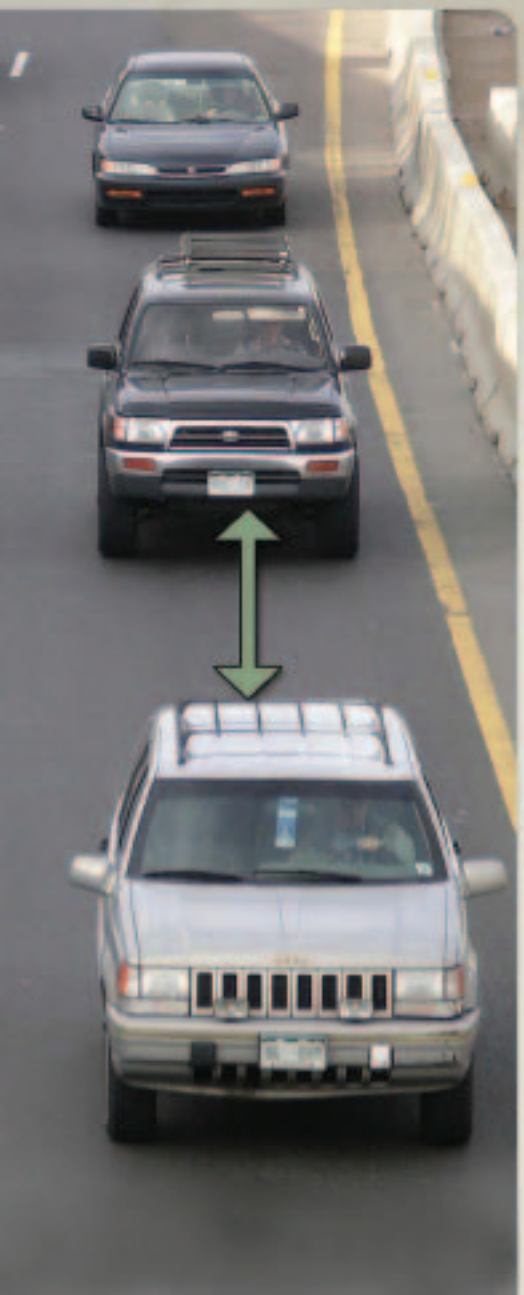
TRAFFIC-ENFORCEMENT TECHNOLOGY VENDORS

LASER TECHNOLOGY, INC.
7070 S. Tucson Way
Centennial, CO 80112
800/280-6113
www.lasertech.com

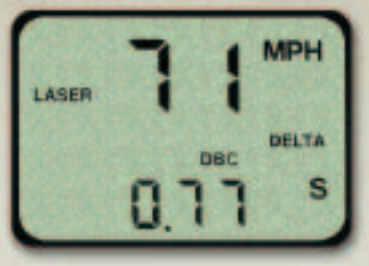
TRAFFIC SAFETY SYSTEMS, INC.
3206 Lanvale Ave.
Richmond VA 23230
804/353-3826
www.vascarplus.com

TAILGATING ENFORCEMENT

Until now, only visual determinations of vehicle separation distances relied upon the judgment of the traffic officer. Introducing DBC (Distance Between Cars) - a software code built right into an LTI UltraLyte 100LR laser that calculates both the time and distance between two traveling vehicles. The mathematics may be complicated, but the operation is simple.



In DBC mode, the UltraLyte displays the time (in seconds)



and the distance (in feet or meters) in the rear LCD.

Start a tailgating enforcement campaign in your community!

LASER TECHNOLOGY INC
Measurably Superior™

call: 877-OWN-A-LTI ext 318
visit: lasertech.com/lom