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Tennessee-Based WRI Pilot Test Completed

"A key concept in the CMRS WRI platform is the use of geofencing technology."
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The Wireless Roadside Inspection (WRI) Pilot Test was conducted to demonstrate the implementation of the commercial mobile radio services system (CMRS) to wirelessly request, collect, and assess safety data message (SDM) sets from commercial vehicles in operation in Tennessee.

Three telematics providers—Innovative Software Engineering, LLC ; PeopleNet, Inc.; and QUALCOMM, Inc.—and six CMV fleets—Bridgestone America's Tire Operations, LLC; Greene Coach Tours, Inc.; McKee Foods Corporation; Pilot Travel Centers, LLC; Tennessee Express, Inc.; and The H. T. Hackney Company, Inc.—participated in the Pilot Test, forming three telematics teams (TTs).

Other participants and stakeholders included Government Systems (USDOT Volpe Center), Law Enforcement (Tennessee Highway Patrol), and safety-sensor providers (Advantage PressurePro, LLC; Hi-tech Transport Electronics, Inc.; and MGM Brakes, Inc.).

A key concept in the CMRS WRI platform is the use of geofencing technology; a geofence is a virtual boundary on a geographic area. When a device that is capable of determining its spatial location (e.g., by using GPS technology) enters, exits, or is inside that area, a notification can be generated. Most CMRS providers offer geofencing capabilities to their customers and this feature is widely used by the trucking industry to improve their operations by, for example, helping to more precisely monitor drivers' arrivals, departures, and route compliance. Geofences can also be used to trigger an event such as a WRI, which was the approach adopted by the CMRS platform. The photos above show the geofences implemented by the TTs for the Knox County, Tennessee Inspection Station (Eastbound I-40). The photos

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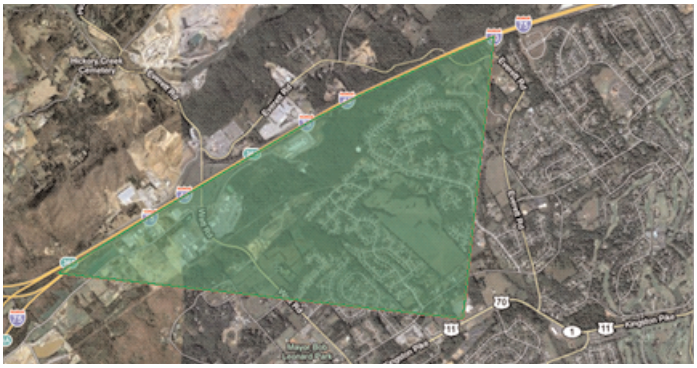

TT1 Knox County Inspection Station Geofence

TT2 Knox County Inspection Station Geofence

TT3 Knox County Inspection Station Geofence

Tennessee-Based WRI Pilot Test Completed *(from Page 1)*

illustrate the different approaches taken by the three teams in defining the geofences that triggered the WRI SDMs.

Testing took place from October 2010 through January 2011. During this period, more than 1,400 SDMs were sent from 12 participating commercial vehicles. This testing was performed along the Commercial Motor Vehicle Roadside Technology Corridor (CMVRTC), on a section of I-40/I-81 between the inspection stations at Knoxville, Tennessee and Bulls Gap, Tennessee, and at the fleet partners' bases of operations. Wireless inspection points included both the fixed inspection stations within the CMVRTC and inspection points to simulate temporary inspection stations. Two of the three TTs entered the Pilot Test and successfully submitted SDMs from WRI-ready vehicles. Those messages were triggered by the vehicle entering a WRI geofence (TT2 and TT3) or by the driver through a self-test (TT2). Driver and vehicle ID information was correctly included in the SDMs and transmitted to the WRI Government system.

Recommended refinements and enhancements to the system included specifying, developing, testing, and validating a logical, safe means to notify the driver that he may bypass the station or must pull in; allowing WRI to be used in near-real-time enforcement and interdiction; methodically examining the current WRI Government system; and developing a matrix of current functionality, maturity, scalability, and desired WRI production functionality.

Phase 1 of the Overweight Vehicle Data Collection Project Completed

The Overweight Vehicle Data Collection Project was conducted to provide FMCSA with current information about the number, type and cargo, of overweight vehicles within the Commercial Motor Vehicle Roadside Technology Corridor (CMVRTC)—I-40 eastbound and I-81 southbound—in order to develop a future effort to assess vehicle defects in overweight vehicles. During this data collection effort, overweight vehicles (permitted and illegally overweight) were assessed.

The following data were collected using a Web-based fillable form to reduce paperwork and to speed the data collection process:

- Date of data collection.
- Time of data collection.
- Officer conducting data collection.
- Type trailer (flatbed, box, car-hauler, specialty rig, etc.).
- Number of axles (including steer)—tractor.
- Number of axles (including drop and additional sections)—trailer.
- Type of cargo (general description—pipe, equipment, steel, concrete, etc.).
- Permitted load (yes, no).
- Overweight (yes, no).
- Vehicle weight data by axle from pit scale.
- NAS inspection performed (yes, no).
- Type NAS inspection, if performed.
- ASPEN report number.
- Weight citation issued (yes, no).
- Amount of overweight, (pounds).
- Corrective action (repositioned load, moved axle, applied drop axle, removed load, re-permitted etc.).

Table 1. Distribution of Vehicles by Axle and Mean Overweight

Number of Axles	Number of Vehicles	Permitted	Overweight Gross	Overweight on Axle	Inspected
2	6	0 (0.00%)	0 (0.00%)	6 (100.00%)	6 (100.00%)
3	7	2 (28.57%)	0 (0.00%)	2 (28.57%)	3 (42.86%)
4	4	0 (0.00%)	0 (0.00%)	3 (75.00%)	3 (75.00%)
5	227	33 (14.54%)	31 (13.66%)	185 (81.50%)	156 (68,72%)
6	85	8 (95.29%)	8 (9,41%)	4 (4.71%)	1 (1.18%)
7	77	75 (97.40%)	8 (10.39%)	1 (1.30%)	1 (1.30%)
8	16	16 (100.00%)	0 (0.00%)	1 (6.25%)	0 (0.00%)
9	3	3 (100.00%)	1 (33.33%)	1 (33.33%)	0 (0.00%)
10	2	2 (100.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
11	8	8 (100.00%)	0 (0.00%)	3 (37.50%)	2 (25.00%)
Total	435	220 (50.57%)	48 (11.03%)	206 (47.36%)	172 (39.54%)

The data for this effort were collected during March from the Knox County and Greene County commercial motor vehicle inspection stations. Data on 435 vehicles were collected and 172 of those—39.54 percent—were also inspected. Table 1 shows the results of the data collection.

Mainline Brake Assessment Conducted on Commercial Trucks in Tennessee

The Mainline Brake Assessment was conducted to support current research in FMCSA's Commercial Motor Vehicle Roadside Technology Corridor (CMVRTC) by randomly sampling CMVs off of the mainline and conducting an NAS Level-1 inspection. The data collected will be used to project the impact that a performance-based brake tester (PBBT) would have on the CMV out-of-service (OOS) rate for a given inspection station in Tennessee. For 6 months in 2010, fixed-site inspection stations in Tennessee performed Level-1 inspections on randomly sampled vehicles from the mainline. In addition to a Level-1 inspection, the Greene County inspection station, in Greeneville, TN, also performed a PBBT inspection on the vehicles since, currently, they are the only inspection station in Tennessee with this capability.

As shown in Table 2, the OOS rate for the inspection stations was above or similar to the national average (24.88 percent for Level-1 inspections on all trucks in CY 2010, FMCSA A&I).

Table 2. Summary of OOS Rates at Inspection Stations

Inspection Station	Number of Vehicles	Overall OOS	Vehicle OOS	Driver OOS
Coffee	219	20.09%	19.18%	10.50%
Haywood	101	37.62%	36.63%	6.93%
Greene	413	70.46%	64.16%	13.32%
Knox	132	28.79%	21.97%	9.09%
Robertson	103	27.18%	24.27%	2.91%
Totals	968	45.35%	41.11%	10.33%

Table 3 shows that if a vehicle were to be tested only on the PBBT, it would be placed out of service 27.13 percent of the time, which is comparable to the national average for Level-1 inspections. However, unlike a Level-1, which is a good indicator of defective brakes, a PBBT allows for the inspector to determine if those defective brakes are capable of stopping the vehicle. A PBBT is also time consuming compared to the traditional NAS Level-1 inspection, which would allow for more vehicles to be inspected per shift. The ability to inspect a larger amount of vehicles would ultimately allow for more defective vehicles to be placed out of service, potentially saving lives.

Table 3. NAS Level-1 and PBBT Test Correlation

	PBBT Pass	PBBT Fail
Level-1 Pass	29 33.33%	11 2.64%
Level-1 Fail	153 39.53%	94 24.29%