Mainline Brake Assessment & Correlation

Introduction

In 2008 the number of large trucks involved in fatal crashes was 4,068. While this number is down 12.2% from the previous year, it is still far too high. During this period there were a total of about 2.3 million truck inspections done with an OOS rate of 23.2%. Since it is impossible to perform full inspections on every vehicle that drives down the road, a more efficient method of selecting vehicles for inspection is needed, if not a new way of inspecting vehicles all together, in order to increase the safety of the roadways.

Mainline Brake Assessment

Introduction
The basis for this study was the assumption that the traditional protocol for selecting CMVs for inspection yields out-of-service rates that do not represent what is truly traveling America's highways. To test this hypothesis, the Mainline Brake Assessment was initiated to obtain statistically significant data which accurately represents the condition of CMVs on the highway.

Methodology
To obtain a truly random sample of vehicles for the Mainline Brake Assessment, the following procedure was used for vehicle selection:

Officer turns PrePass off, then waits 1 minute to allow the mainline to be representative of all vehicles on the highway. → Officer selects the 4th vehicle from the mainline, without any prior knowledge of the vehicle. → Officer performs an NAS Level-I inspection on the vehicle selected (or as much of a Level-I inspection as possible)

Results

	CMVs	OOS Rate		
		Overall	Vehicle	Driver
Greene Co.	316	70.89%	67.72%	13.29%
Coffee Co.	143	16.78%	9.79%	8.39%
Knox Co.	132	28.79%	21.97%	9.09%
Haywood Co.	101	37.63%	36.63%	6.93%
Robertson Co.	94	23.40%	21.27%	2.13%
Totals	786	44.02%	39.95%	9.54%

Correlation Study

Introduction
Since the institution of regulations allowing PBBTs to be used for enforcement purposes in 2007, the relationship between the results of a PBBT and the NAS Level-I inspection has been researched. Would a PBBT be a viable replacement for brake stroke measurements of a Level-I inspection? Or perhaps a PBBT could even be used in lieu of a Level-I inspection to increase contact with CMVs by enforcement officials. These correlation studies address issues pertaining to the optimal use of the PBBT in an enforcement setting.

Methodology
The selection of vehicles for the correlation study was similar to that for the Mainline Brake Assessment. However, after the Level-I inspection, the officer also performs a PBBT test on the vehicle. This is done to prevent the officer from knowing which specific wheel-ends to focus on prior to inspecting the Level-I, since this could cause the officer to look "harder" for violations on those particular wheel-ends.
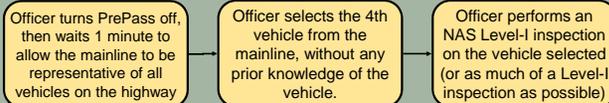
Results

		PBBT Test Results	
		Pass	Fail
Level-I Results	Pass	28.80% / 91	0.32% / 1
	Fail	47.15% / 149	23.73% / 75

Future Work

Future assessments include expanding the Mainline Brake Assessment to include the selection of vehicles for inspection at temporary sites statewide rather than at fixed inspection stations. This effort will be underway starting in fall 2010. In addition, more PBBT and Level-1 correlation data will be collected and entered into ORNL's Level-1/PBBT Analysis Tool (LPAT) to expand the data analysis capabilities of this tool for both research and enforcement users.

Commercial Motor Vehicle Roadside Technology Corridor

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