



Brake Performance Evaluation Technologies

**2006 Commercial Vehicle Brake Safety
Symposium**

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Carrier Benefits

- (PBBT) program in a motor carrier fleet setting provides a way to improve the overall performance of the brakes on its vehicles.
- The direct benefits of improving brake performance are improved vehicle safety, longer brake life, reduced maintenance costs, and elimination of non-compliance events on the road.
- The speed at which these benefits are realized depend on the severity of brake use and vehicle vocation



Carrier Benefits

- offers insight into actual vehicle braking performance
- allows maintenance staff to pinpoint problem areas
- identify where improvements can be made
- what changes will produce the greatest benefit

Performance Variables

- Performance of brakes depends on a number of factors
 - how well they are engineered for their application
 - the quality of the repair and maintenance work that is carried out on the brakes

These factors are variable



Types of Carrier Benefits

▪ Short Term Benefits of Using a PBBT

- avoids unnecessary repairs
- shortens diagnostic times
- increasing vehicle utilization

▪ Longer Term Benefits of Using a PBBT

- Analysis of PBBT test data will identify where repair, preventive maintenance, parts replacement, and operating factors can be enhanced to reduce premature brake wear and extend brake life

vehicle engineering and application

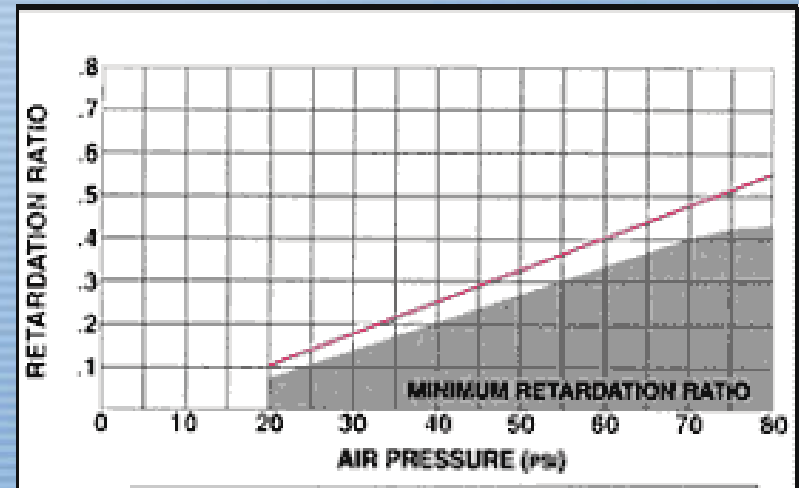
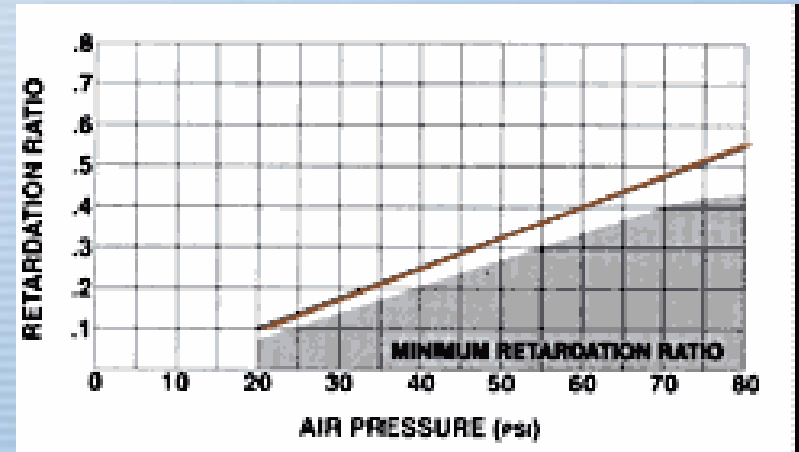
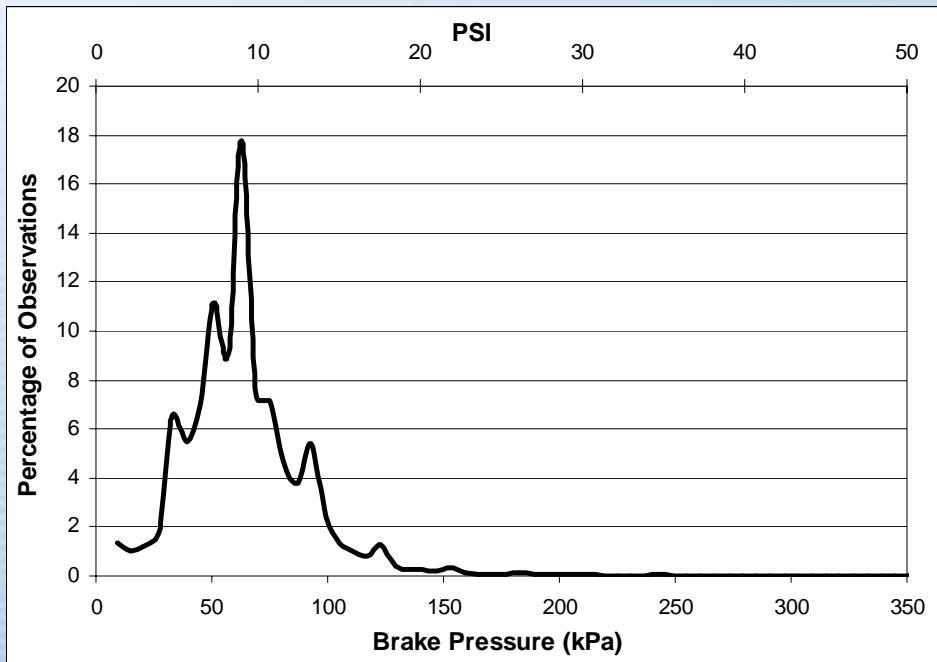


Realizing the Benefits

- A carrier that is not prepared to change anything...
- ...doesn't need a PBBT



What performance range matters?



Where do you spend your money?



Program Implementation

5 Stages

A. Assessment

Developing objectives and expectations

B. Program initiation

Install equipment and train staff

C. Stage-One Testing

100 to 200 vehicle tests using wide performance tolerances

D. Stage-Two Testing

500 to 1000 vehicle using narrower performance tolerances

E. Mature Program

On-going testing using fleet specific performance tolerances



Proficiency Levels

- Technology is only as good as the skill and knowledge of the technician/operator
- Carrier expectations exceed technician competency at first



Level	Description	Prerequisites	Training Experience	Skills Knowledge	Capability
1	Inspector	CVSA Inspector or Technician	4 hours	road side enforcement	overall braking test results
2	Technician	License or accreditation	4 hours	basic diagnostics	test results and fault tree
3	Advanced Technician	Level 2 - Minimum 50 Tests	16 hours theory	full diagnostics	diagnose and correct brake problems
4	Expert	Level 3 - Minimum 100 Tests	24 hours theory	coach and trainer	Advanced diagnostics



TWO PILOT PROJECTS

CHALLENGER MOTOR FREIGHT

- Over the road fleet
- Low brake wear (long haul)
- Develop PBBT implementation plan
- 165 tests in 6 months



MIAMI DADE TRANSIT

- Transit fleet
- High brake wear (frequent stops)
- Implemented PBBT plan
- 104 tests in 6 weeks



PBBT PILOT PROJECT @ CMF

- January 2005 – Meeting in Toronto
- September 2005 – System delivered
- December 2005 - Implementation plan created
- January 2006 – Pilot “kick off”
- February 2006 – Training provided
- May 2006 - Data summary



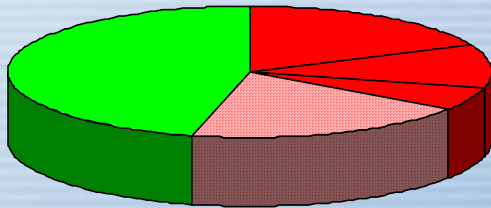
All vehicles were tested AFTER passing a PM inspection



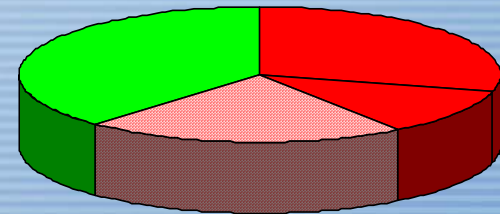
RESULTS SUMMARY

		MDT	CMF	Total	Note
	Low Brake Force - Full Treadle	19	39	58	
	Brake Failure - Other	11	0	11	Include 5 failed during test
	Failed Park Brake	6	15	21	
	Brake Efficiency @40PSI	20	29	49	Did not fail at full treadle
	OK	48	51	99	
	Total	104	134	238	

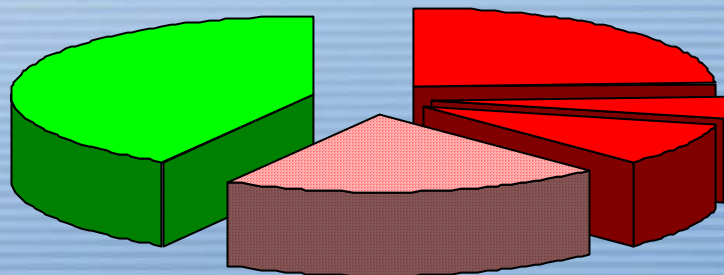
Miami-Dade Transit



Challenger Motor Freight



Total - Both



42% Pass
24% low brake force