

**STATE OF MARYLAND
MASS TRANSIT ADMINISTRATION
BALTIMORE CENTRAL LIGHT RAIL LINE
TEST PROGRAM
To Evaluate
Ride Quality for Higher Unbalance Speeds on Curves**

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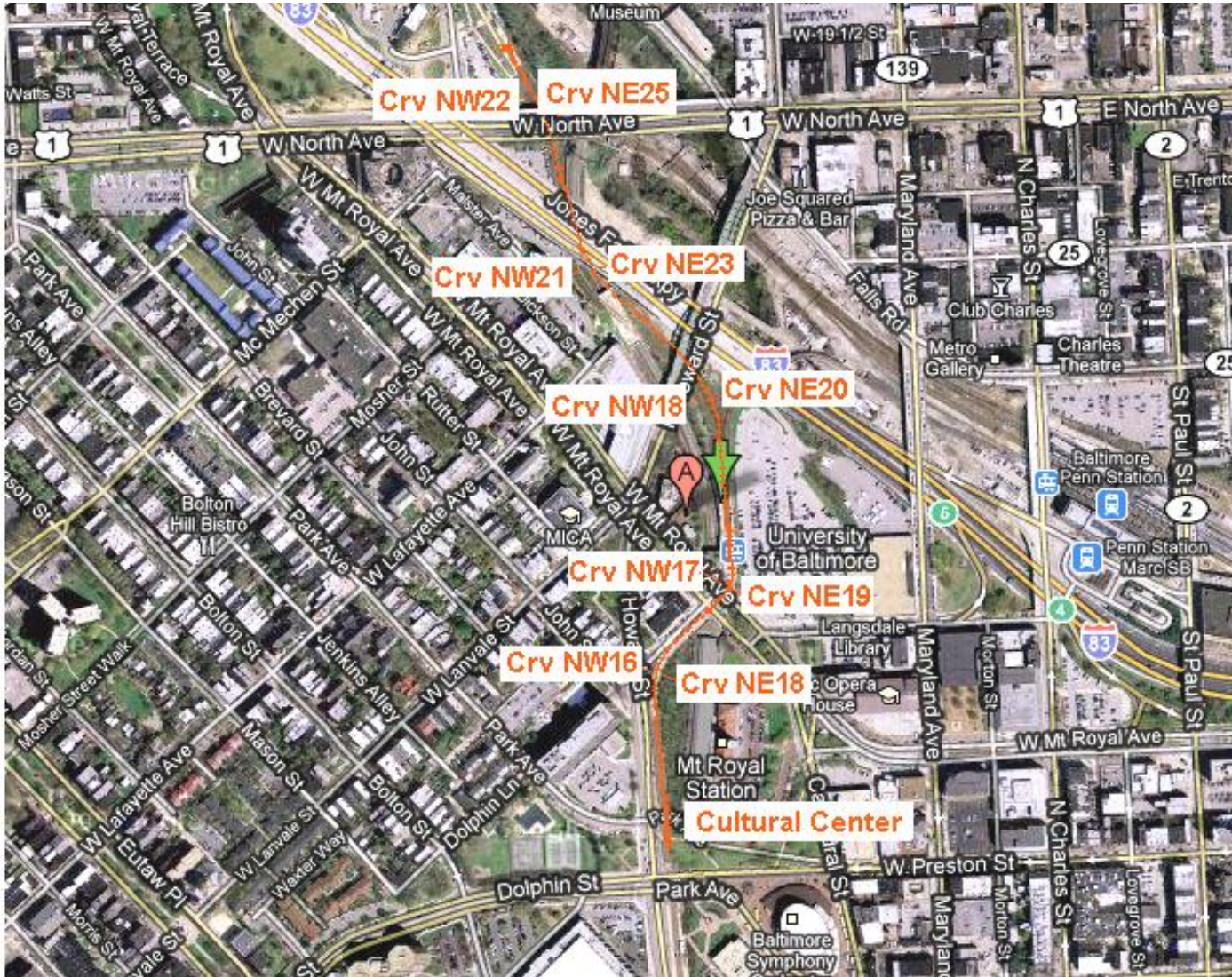
ENSCO, Inc.

June 8th 2010

Summary

- Objective - Compare carbody accelerations measured through curves to passenger ride comfort evaluations
- Tests conducted on Baltimore LRT - April 18, 2010
- Ridemeter measurements - lateral and vertical accelerations on carbody floor
- Five curves on northbound track, and five curves on southbound track tested at various speeds

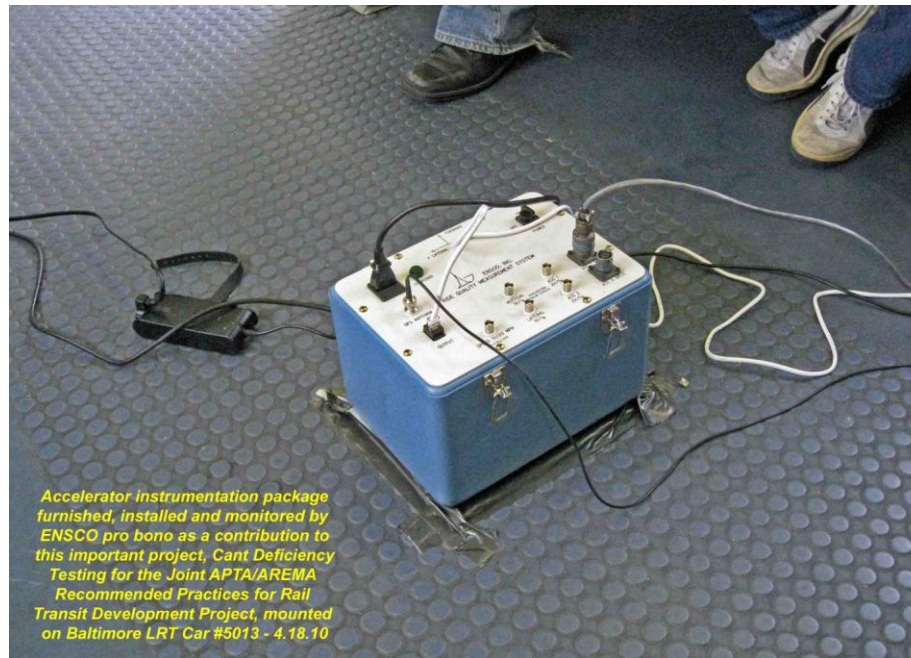
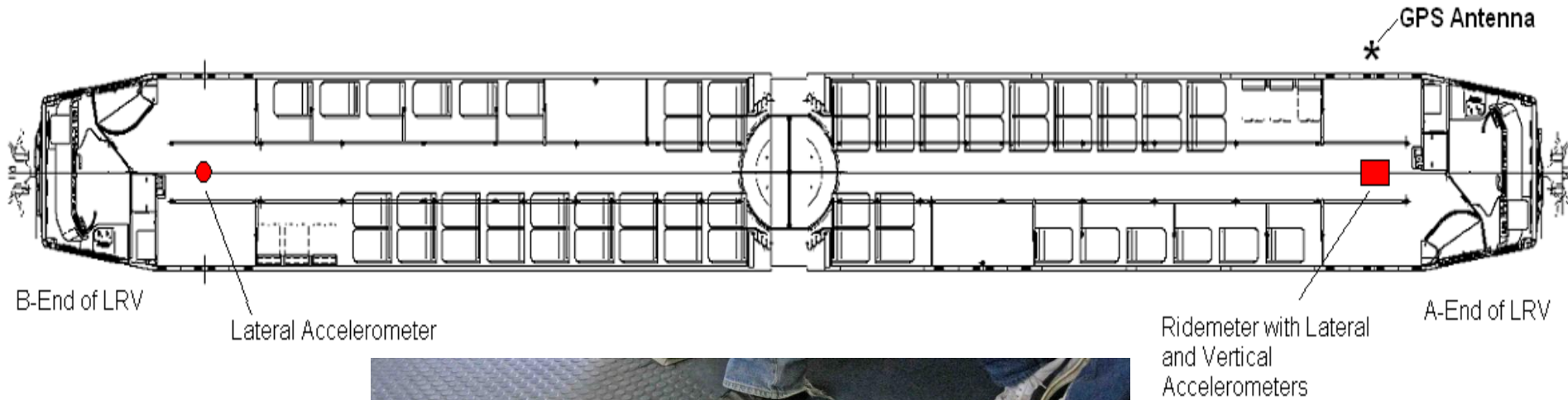
Test Route



MTA Baltimore LRT Car #5013



Ridometer Instrumentation

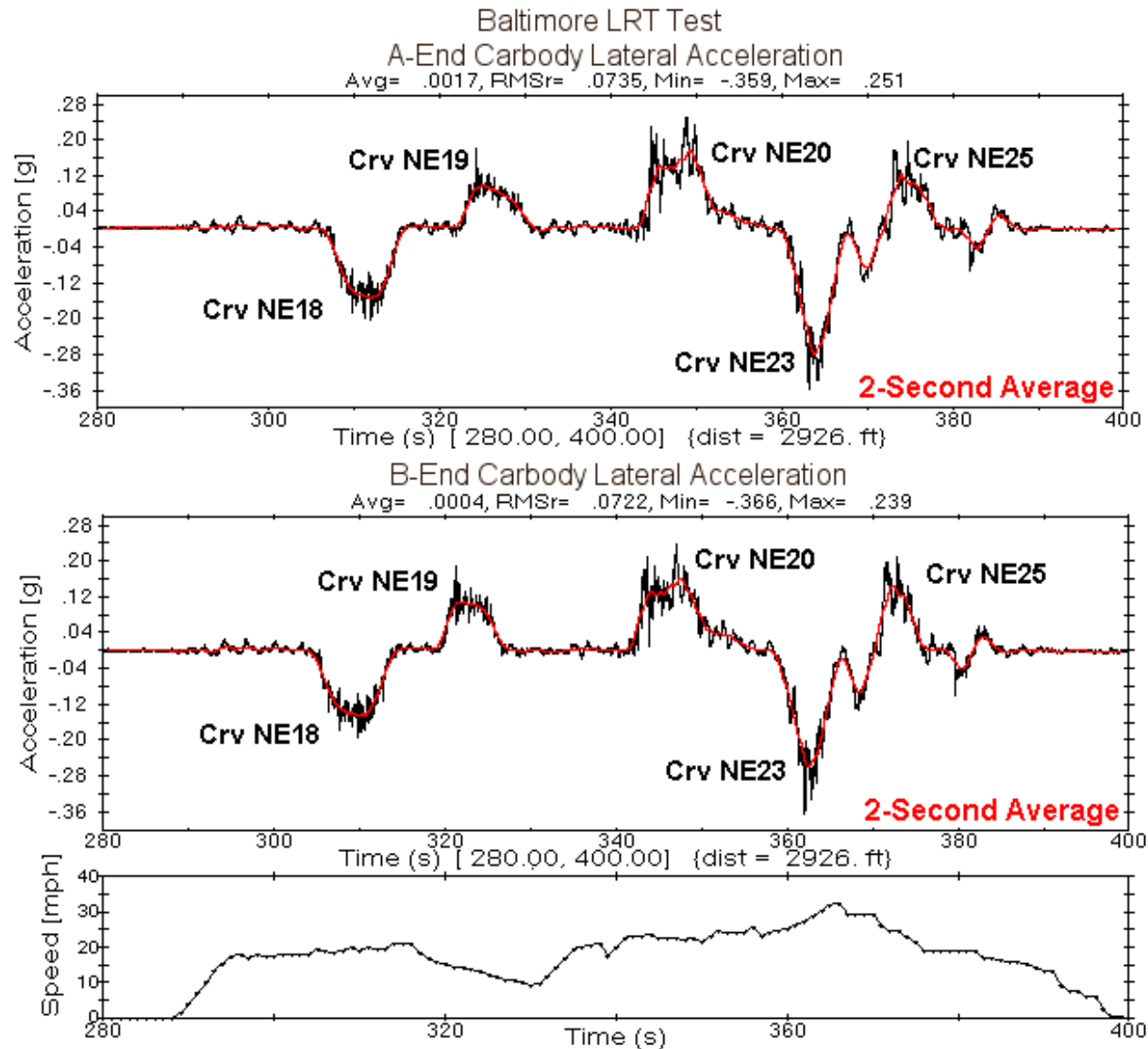


Data Collected and Ride Quality Hours

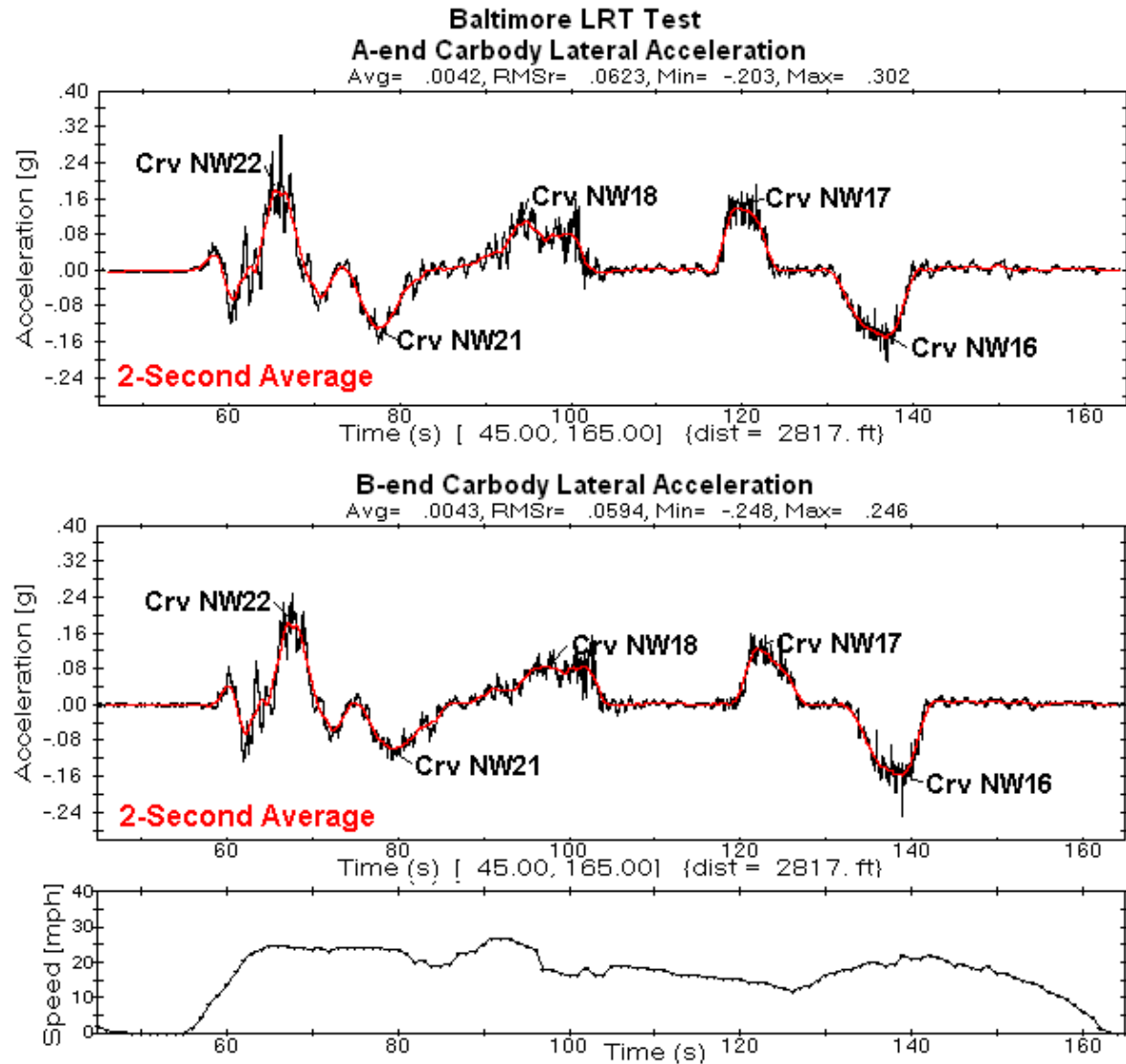
	Filename	Direction	Intended Unbalance		A-End Lateral Ride Quality	B-End Lateral Ride Quality	A-End Vertical Ride Quality
			Southbound or Northbound	In inches			
NW Track	100418071013.rqm	SB	6	0.1	18.5	21.7	4.0
	100418071605.rqm	NB	7.5	0.125	7.9	10.1	3.1
	100418082400.rqm	SB	9	0.15	10.5	16.4	4.7
	100418082859.rqm	NB	10.5	0.175	10.2	12.5	6.1
NE Track	100418072623.rqm	SB	6	0.1	17.1	22.1	7.9
	100418073206.rqm	NB	7.5	0.125	8.2	9.8	9.3
	100418080646.rqm	SB	9	0.15	9.1	7.9	6.4
	100418081216.rqm	NB	10.5	0.175	7.3	8.1	7.5

- Subjects were located at the end which was leading and noted their evaluations on a log sheet

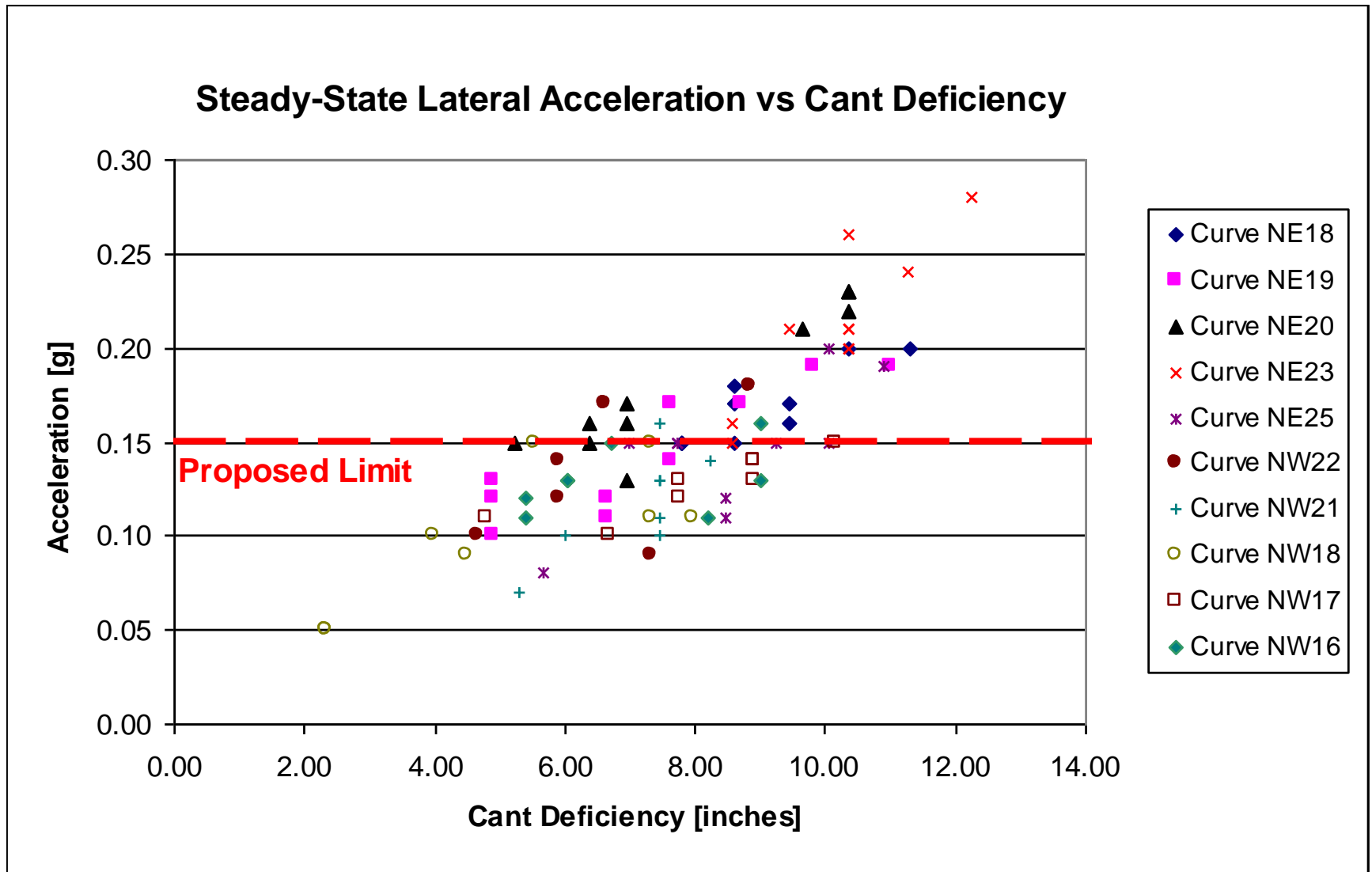
Carbody Lateral Acceleration, Northbound Run 12



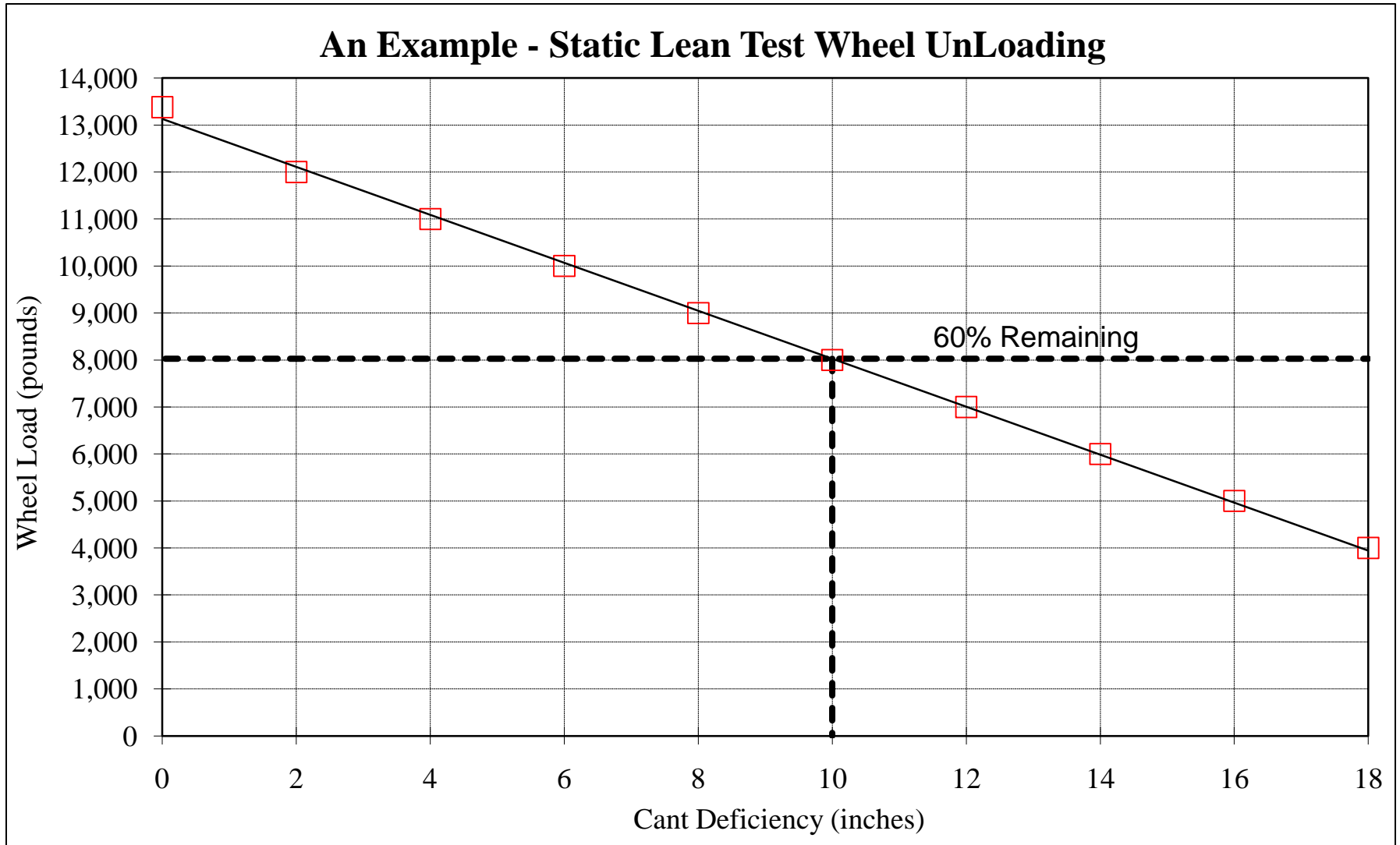
Carbody Lateral Acceleration, Southbound Run 14



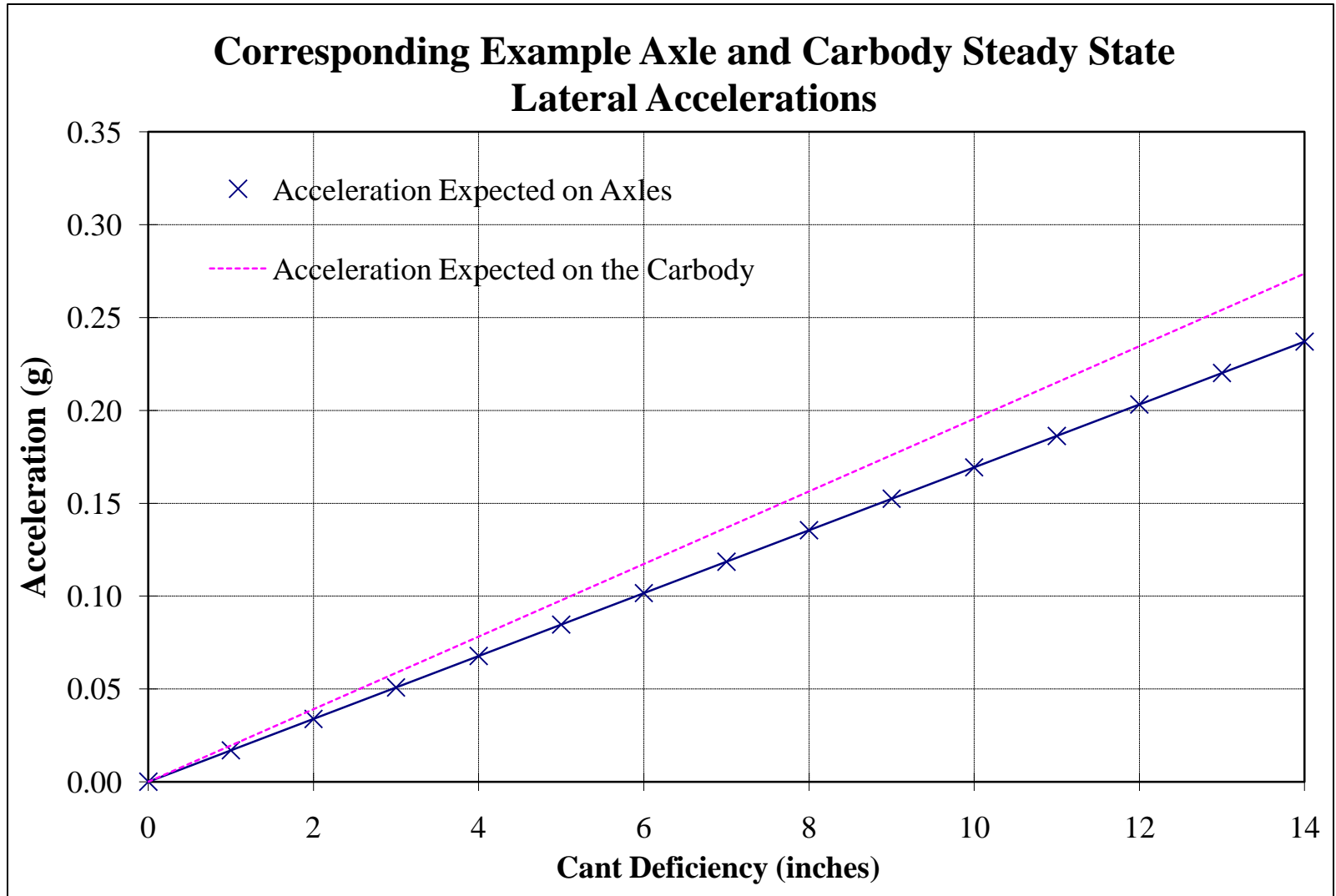
Measured Lateral Accelerations



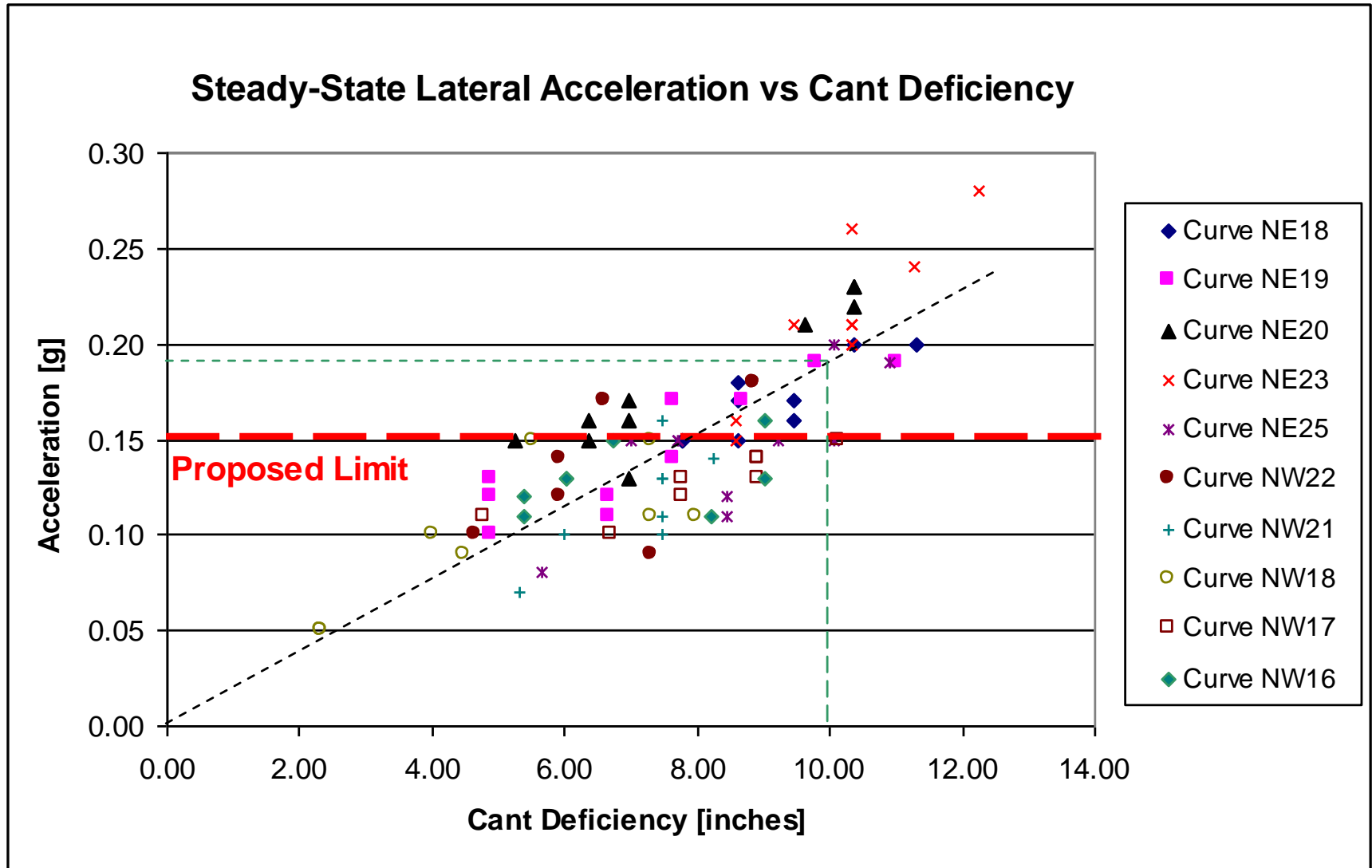
Example Static Lean Test Results



Example Static Lean Test Results



Measured Lateral Accelerations



Observations

- Maximum Steady State lateral acceleration measured was 0.28 g.
- Ride quality in terms of hours that people would tolerate using the acceleration measurements decreased significantly with speed.
- Safety considerations take precedence over the perceived loss of comfort.
- Speed control needed in sharp curves to maintain ride comfort and safety.
- More analysis to be conducted using data from the subjective evaluations.