

Witness Testing
Columbus, OH
March 10, 2020



Test Results for Single Draft Weigh-in-Motion of Vehicles

METTLER TOLEDO

Objective

There is a growing need in the market to provide commercial vehicle weighing transactions faster than can currently be done by static weighing while maintaining the existing weighing accuracy levels.

- **This witnessed data is being offered in support of Item SCL-20.12:** Multiple Sections to Add Vehicle Weigh-in-Motion to the Code.
 - This item requests changes throughout the Handbook 44 scale code to include provisions for Commercial Single Draft Weigh-in-Motion Vehicle Scales.
- **Objective for this witnessed data:**
 - Present additional test results for a single draft weigh-in-motion vehicle scale.
 - Show NCWM members that technology exists today that will allow vehicles to be weighed in motion to HB44 Class III L acceptance tolerance.
 - Convince NCWM members to support Item SCL-20.12.

Single Draft Weigh-in-Motion Vehicle Scale

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Capacity: 100'000 lb

Increment (d): 20 lb

CLC: 100'000 lb

Accuracy Class: III L (WIM)

Speed Range: 1-5 mph

Maximum Speed Change: 2 mph

Max Wheelbase: 55'

Vehicle Direction Capability:
Uni-directional

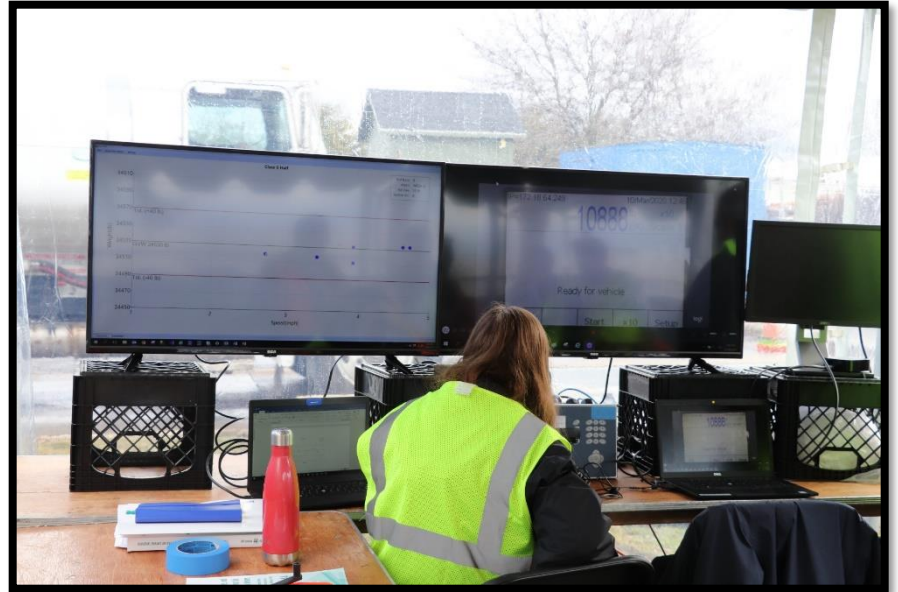
Dimensions: 70' x 11'

Approach: 11' in plane, 70' straight

Location: Columbus , OH

This is a prototype and additional development work is still required to productize this technology.

SD-WIM Witness Testing Photos



Participants

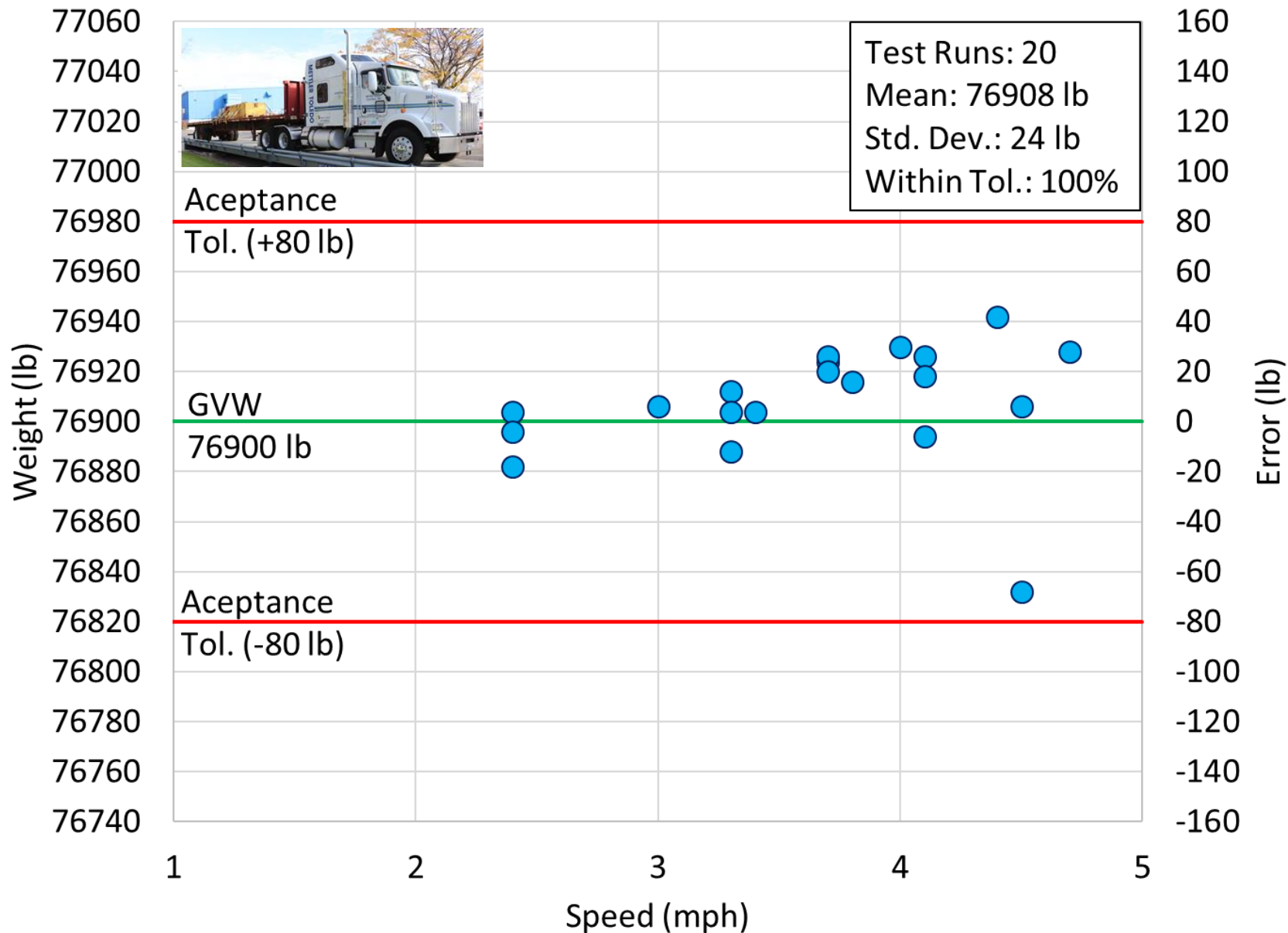
- John Barton
 - NIST OWM, NCWM S&T
- Tom Buck
 - Ohio Dept. of Ag., W&M
- Douglas Dummer
 - Wisconsin Dept. of Ag.
- Darrell Flocken
 - NTEP Administrator
- Jason Flint (not present)
 - NJ OWM, NCWM S&T
- Nathan Gardner
 - Oregon W&M, NTEP Evaluator
- Jeff Gibson
 - Ohio Dept. of Ag., W&M
- Lenny Goebel
 - Illinois Dept. of Ag., W&M
- Mike Kelley
 - Ohio Dept. of Ag., W&M

Single Draft Weigh-in-Motion Vehicle Scale Testing METTLER TOLEDO | 6

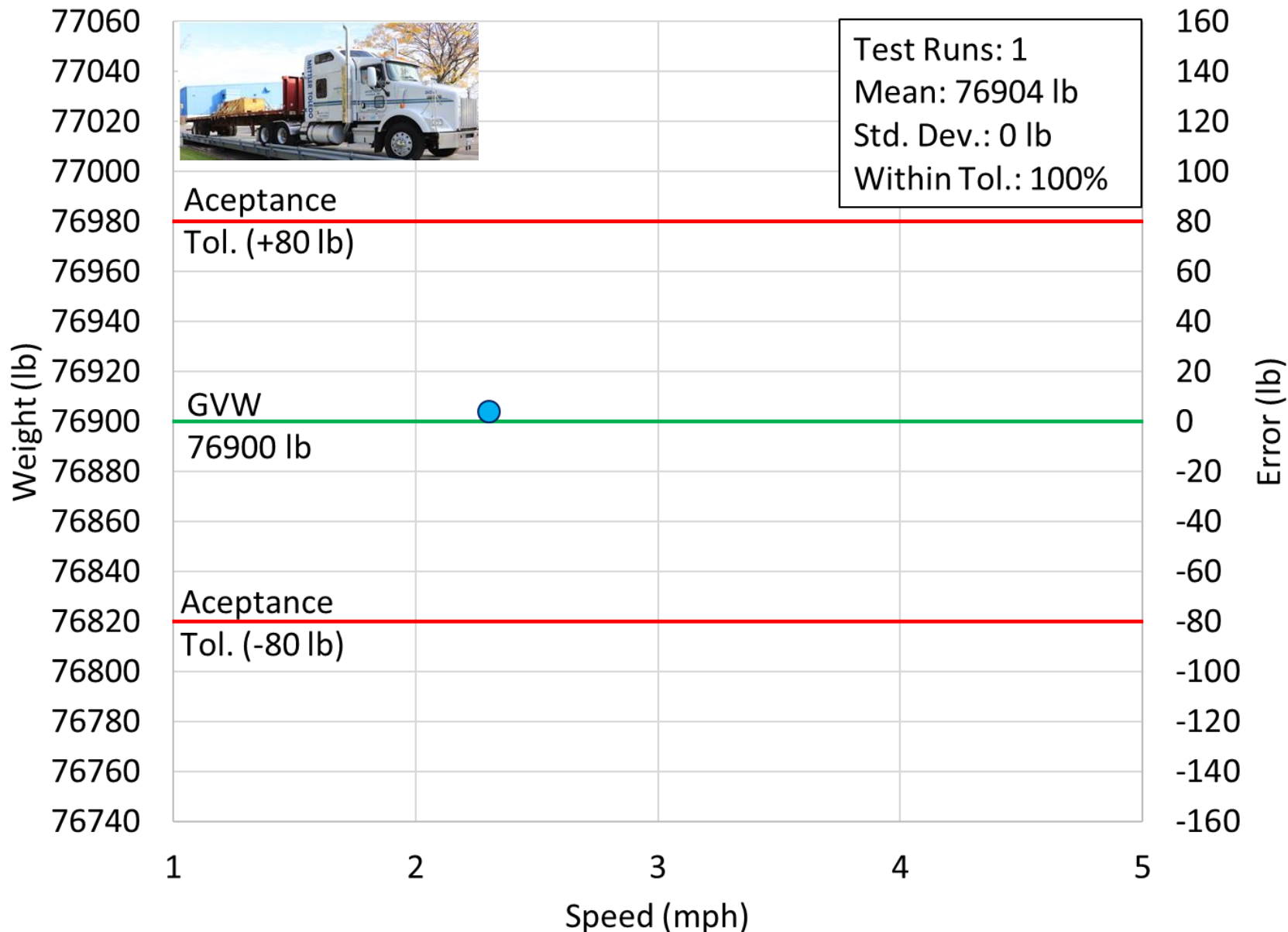
Test Matrix: 3 Truck Types with 3 Load Conditions at Speeds up to 5mph

Truck Type		Gross Vehicle Weight (GVW)
Class 9 Semi-Truck		Full Load: 76,900 lb
		Half Load: 54,230 lb
		Empty: 31,620 lb
Class 6 Tanker		Full Load: 49,190 lb
		Half Load: 34,530 lb
		Empty: 20,220 lb
Class 5 Truck		Full Load: 27,750 lb
		Half Load: 22,750 lb
		Empty: 17,750 lb

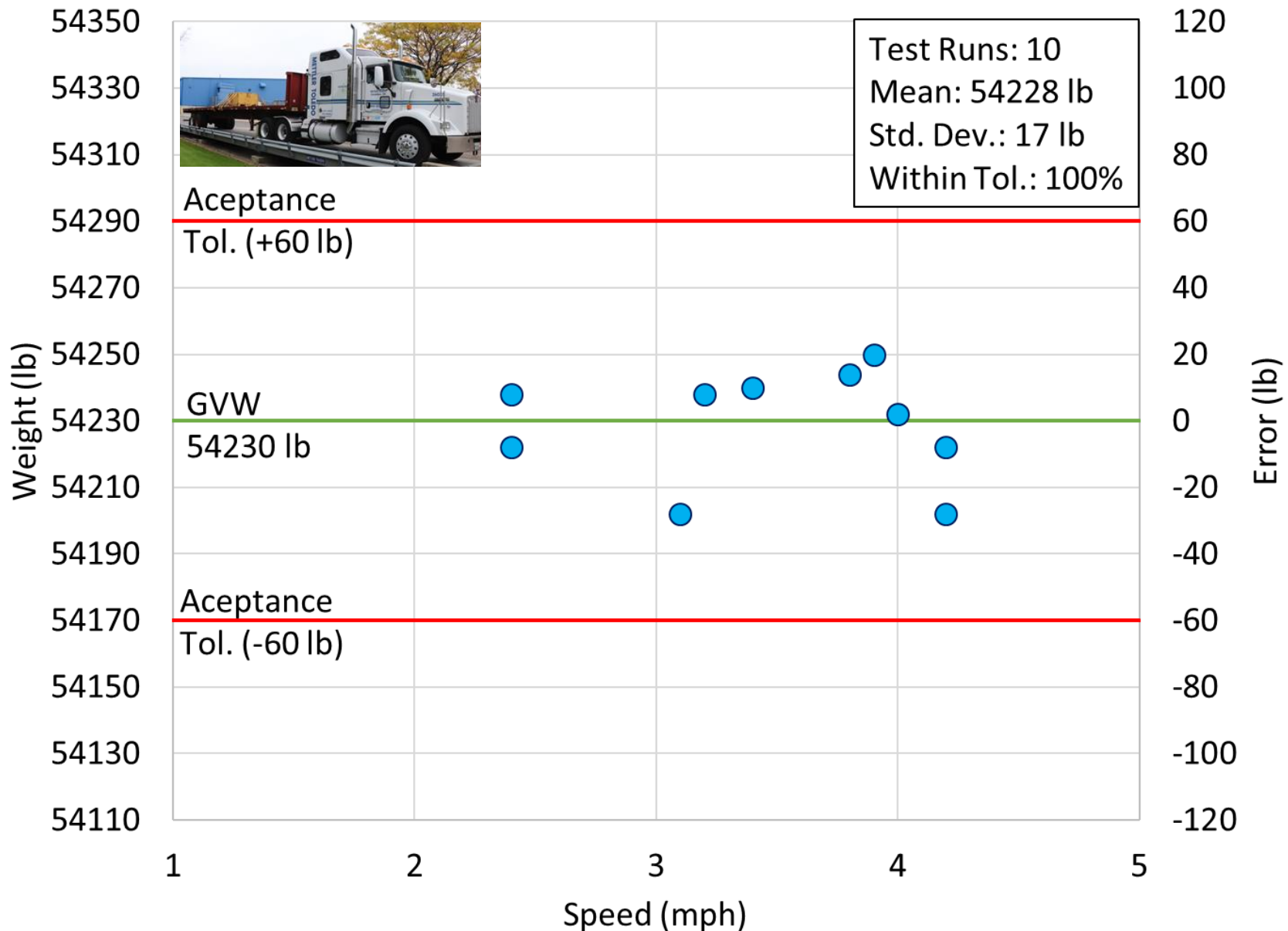
SD-WIM Weighments: Class 9 Truck, Full Load



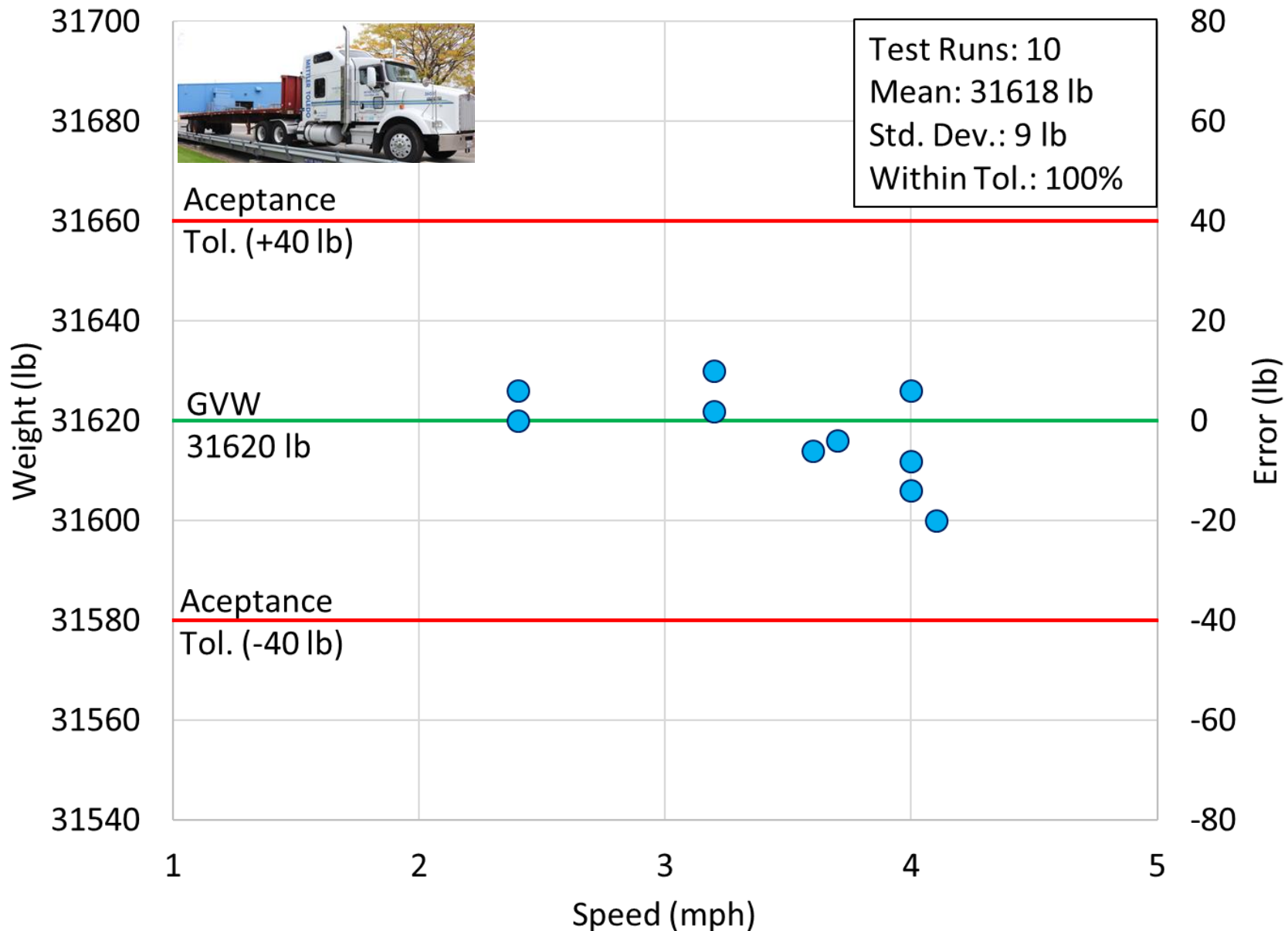
SD-WIM Weighments: Class 9 Truck, Full Load, Run off-center



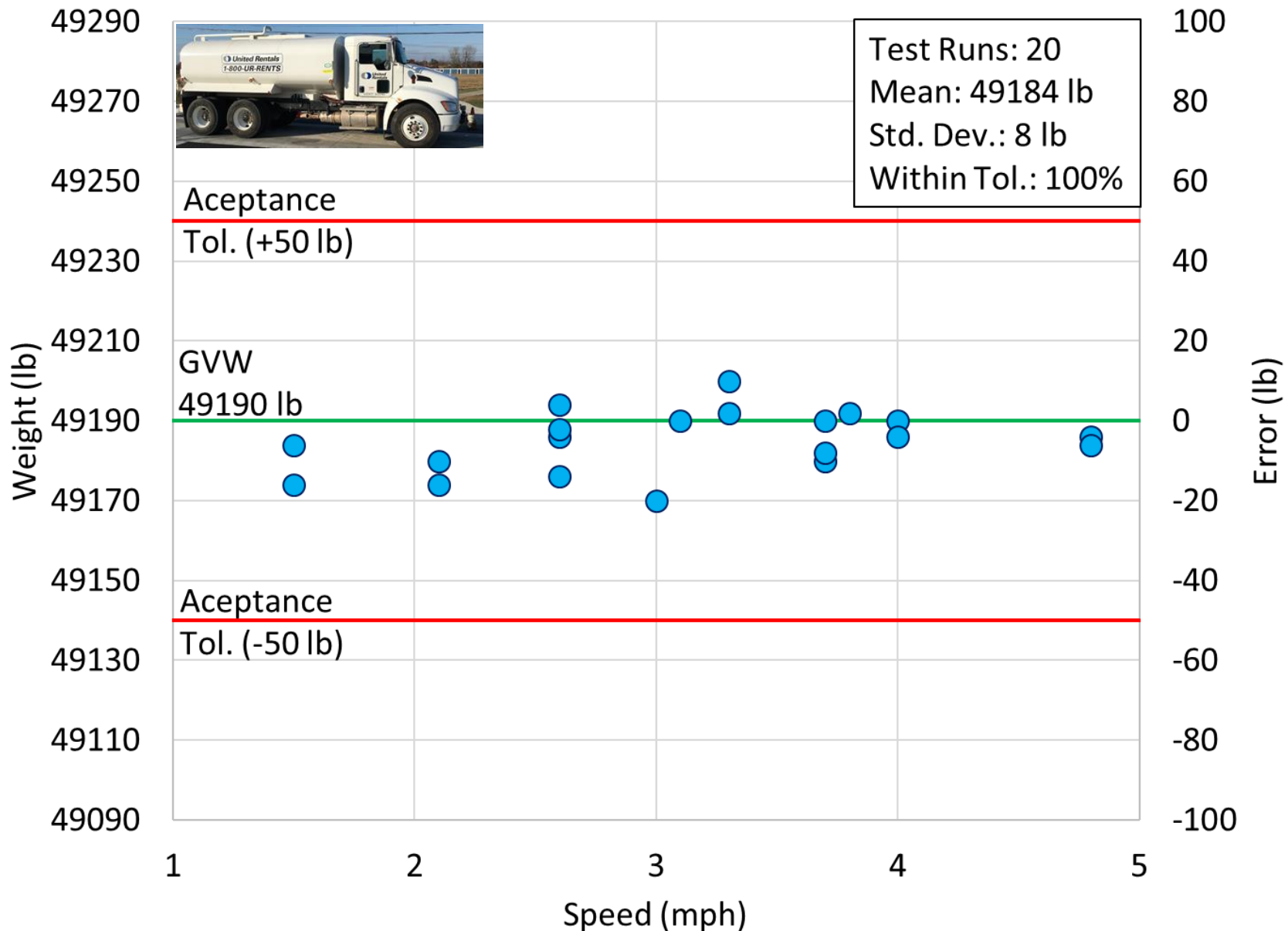
SD-WIM Weighments: Class 9 Truck, Half Load



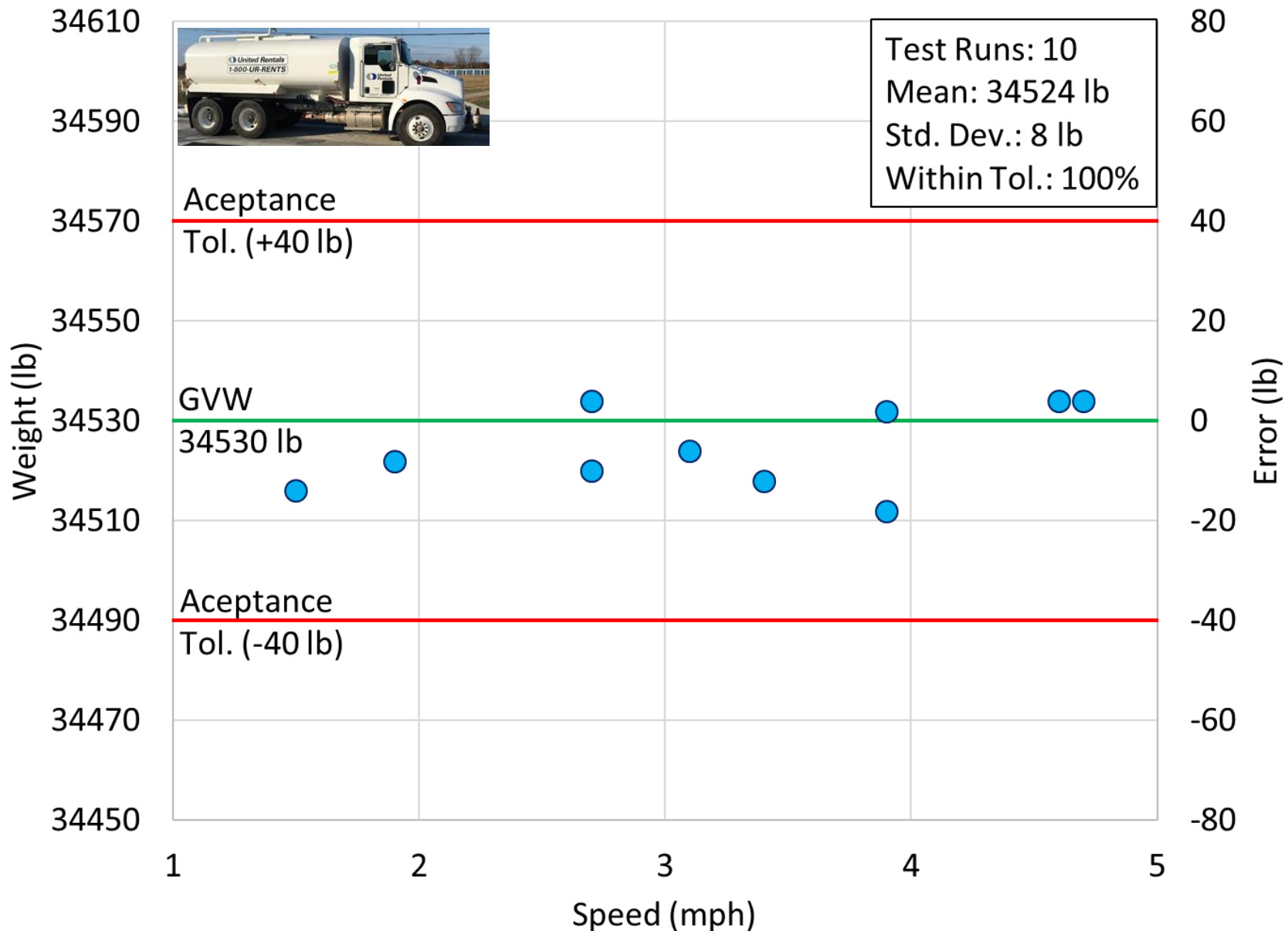
SD-WIM Weighments: Class 9 Truck, Empty



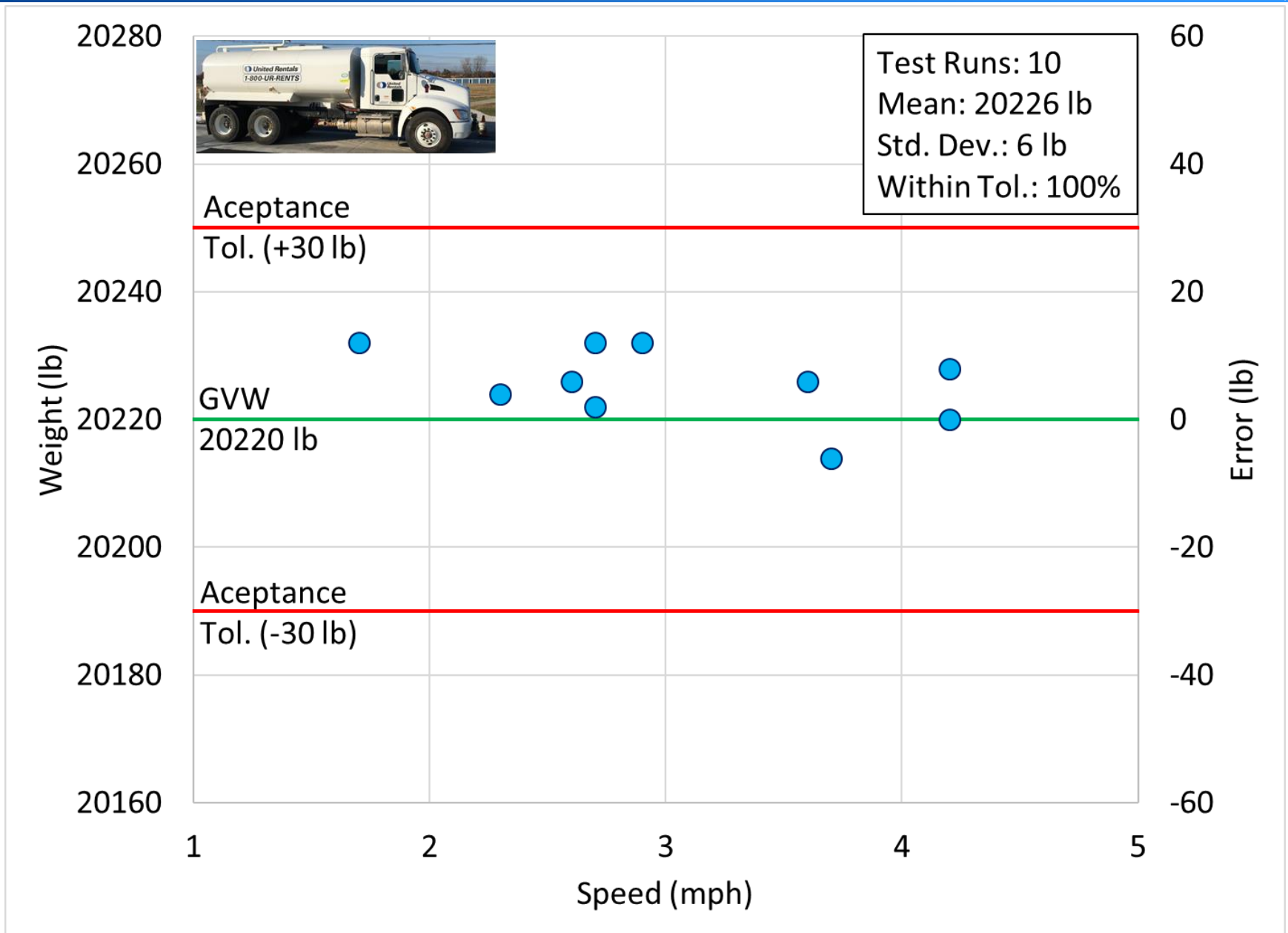
SD-WIM Weighments: Class 6 Tanker, Full Load



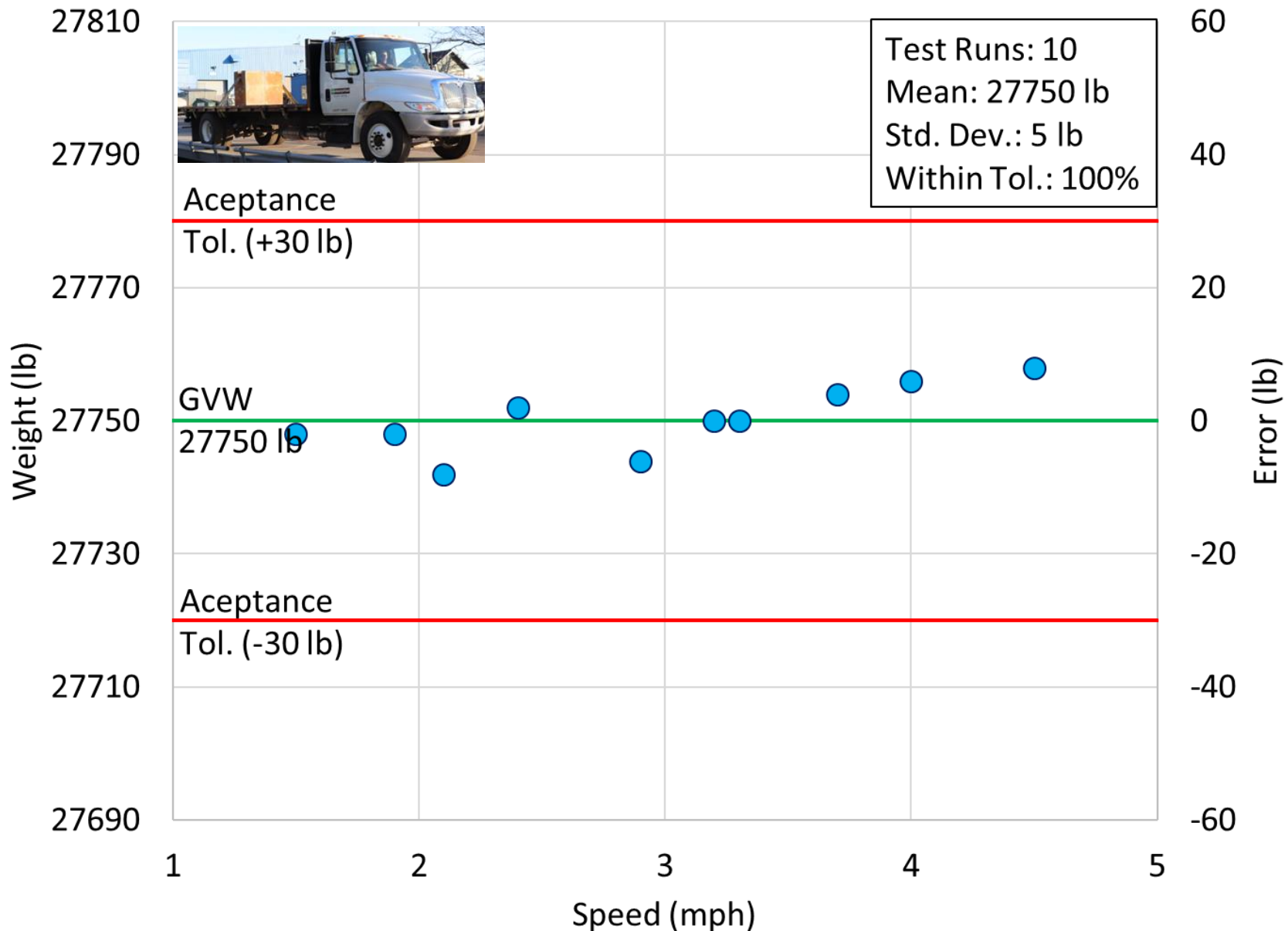
SD-WIM Weighments: Class 6 Tanker, Half Load



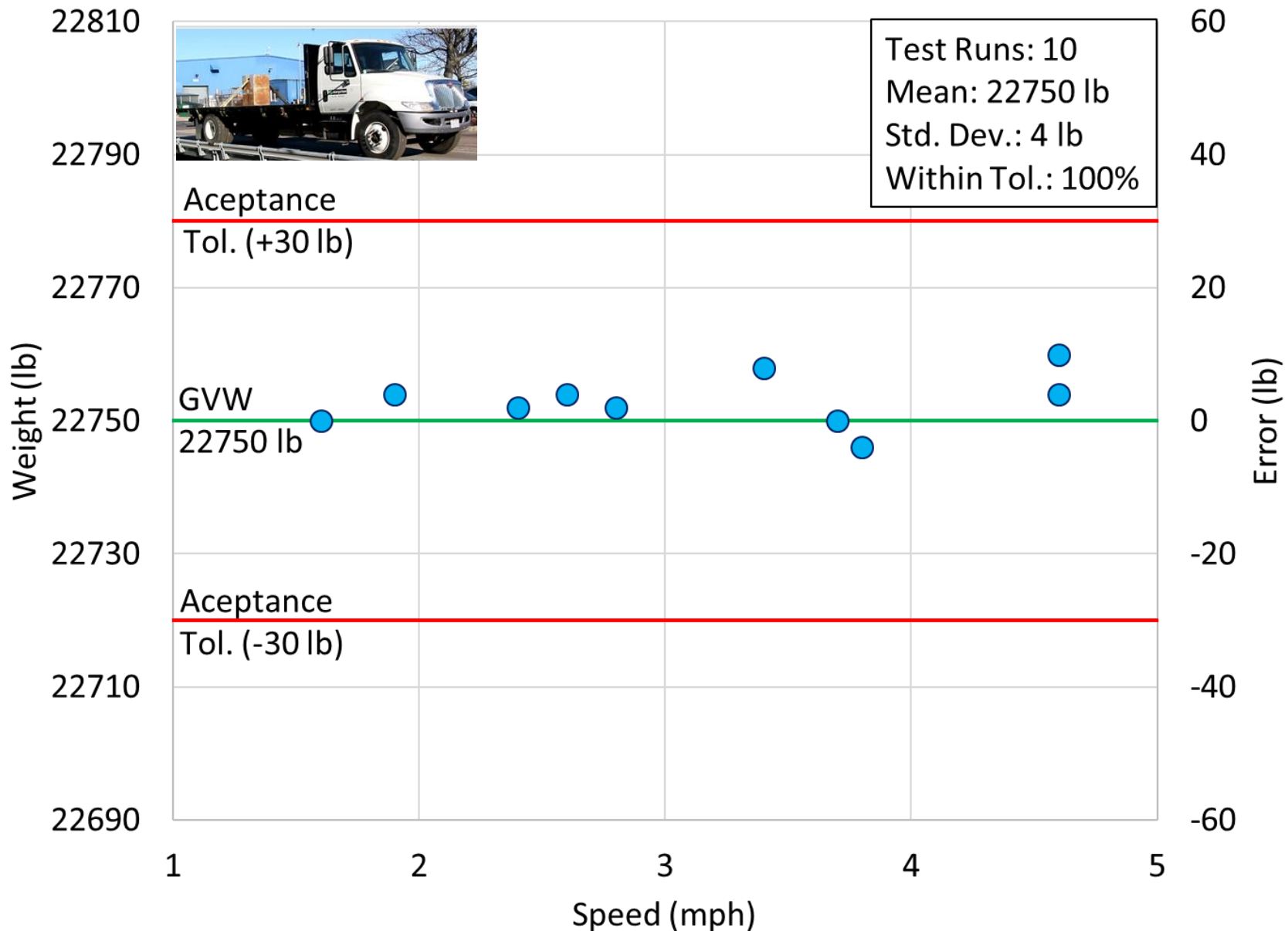
SD-WIM Weighments: Class 6 Tanker, Empty



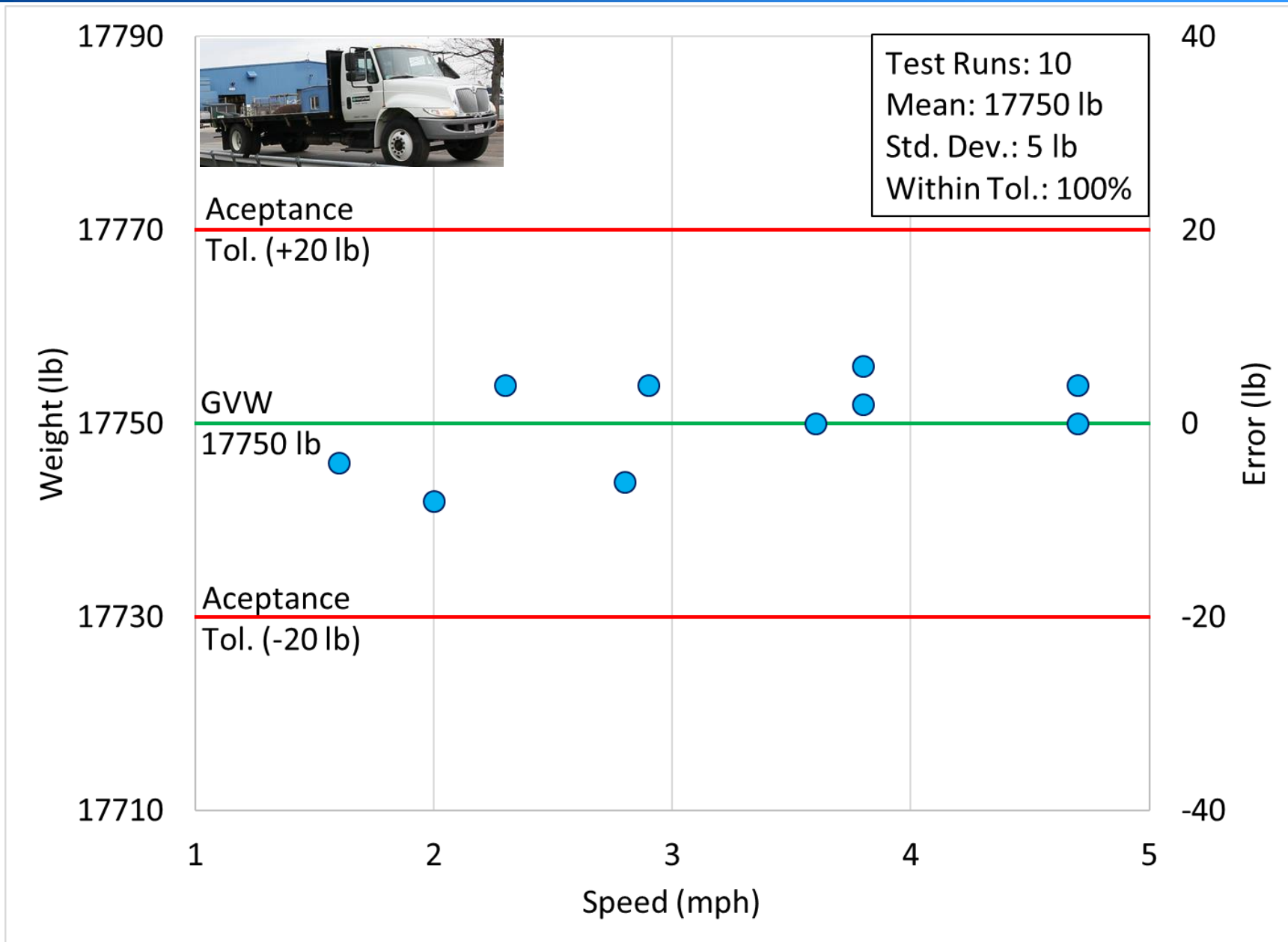
SD-WIM Weighments: Class 5 Truck, Full Load



SD-WIM Weighments: Class 5 Truck, Half Load






SD-WIM Weighments: Class 5 Truck, Empty



Single Draft Weigh-in-Motion Test Summary

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In total 110 SD-WIM weighments were performed of which 100% were within Handbook 44 Class III L acceptance tolerance limits.

Truck Type		Tests Within Class III L Acceptance Tolerance
Class 9 Semi-Truck		Full Load: 100% ✓
		Half Load: 100% ✓
		Empty: 100% ✓
Class 6 Tanker		Full Load: 100% ✓
		Half Load: 100% ✓
		Empty: 100% ✓
Class 5 Truck		Full Load: 100% ✓
		Half Load: 100% ✓
		Empty: 100% ✓