

PASSENGER SAFETY WORKING GROUP UPDATE to the
26th Meeting of the RSAC MAIN BODY
Washington Plaza Hotel
Washington D.C.
May 18, 2005

PASSENGER SAFETY TRACK VEHICLE INTERACTION TASK FORCE



By John J. Mardente, Task Force Leader,
(Track Safety Specialist, FRA)

Task Force meetings to date: 4/20/04; 6/24/04; 8/25/04;
10/14/04; 12/9/04;
02/10/05; 04/07/05

Subgroup meetings to date: 5/24/04; 7/6/04; 7/22/04;
8/24/04; 10/12/04; 12/7-
8/04; 02/8-9/05, 04/06/05

Next PSVTI Task Force Meeting is in Arlington, VA at the Courtyard Marriott @ Crystal City, June 22, 2005.

Task Force Ongoing Issues

Item G1-1: Wheel Flange Angle

Item G1-2: Wheel Conicity

Item G1-3: Truck Equalization

APTA PRESS Committee was formed to research these Items and develop appropriate industry standards

*Status: No proposals for Main Body at this time - discussion ongoing
- Next meeting June 9-10, 2005 @ Pittsburgh, PA vicinity.*

Task Force Ongoing Issues

Item G3-1: CFR 213/ 238 Language Consolidation

Task Force has agreed to proposed new language.
Working Group to agree on appropriate cross references

Status: No proposals for Main Body at this time - discussion ongoing

Item G2: Instrumented Wheelset Testing Requirements

- Revise qualification requirements for new equipment, Class 6 (90-110 mph)
- Surrogate measures.
 - Simulation (see slide #7)
 - Acceleration Testing
- Qualification over segment representative of entire route
- Annual IWS test Class 8 and 9* eliminated (*See Item G-7) subject to acceptable system performance

Subgroup is in process of researching and discussing:

- Revised Class 6 IWS testing requirements.
- Qualified equipment/ tracks of same class.
- Incorporation of Item G5-1 Cant Deficiency (because qualification now includes lean tests and IWS at curves, etc)

Status: No proposals for Main Body at this time - discussion ongoing 5

ITEM G2 – Qualification Requirements

ITEM G5-1 – Cant Deficiency Regulations

Requirements for New Equipment

Cant Deficiency	Static Lean Test	Accel Test	Simulation	IWS Test
≤ 3 in	Not Required	> 90 mph	> 90 mph	> 110 mph
≤ 4 in	All Speeds	> 90 mph	> 90 mph	> 110 mph
≤ 5 in	All Speeds	All Speeds	> 90 mph	> 110 mph
≤ 6 in	All Speeds	All Speeds	> 90 mph	> 90 mph
> 6 in	All Speeds	All Speeds	All Speeds	All Speeds

ITEM G2 – Qualification Requirements

ITEM G5-1 – Cant Deficiency Regulations

Requirements for Qualified Equipment on Untested Route

Cant Deficiency	Static Lean Test	Accel Test	Simulation OR IWS Test
≤ 3 in	Not Required	Not Required	> 110 mph
≤ 4 in	Not Required	Not Required	> 110 mph
≤ 5 in	Not Required	> 90 mph	> 110 mph
≤ 6 in	Not Required	All Speeds	All Speeds
> 6 in	Not Required	All Speeds	All Speeds

ITEM G2 – Qualification Requirements

- Simulation of performance, IWS measurements, or accelerometer measurements will be conducted using an industry recognized methodology on a segment representative of the full route on which the equipment is intended to operate. Simulations and examination of the route track geometry will be used to determine a segment statistically representative of the route and inclusive of the most severe conditions. Simulations will also be conducted on an analytically defined track segment representative of minimally compliant track conditions for the respective class.
- Any IWS or accelerometer test must be accompanied by a track geometry survey within two weeks of the test.

ITEM G2 – Qualification Requirements

- Establishes procedure for allowing qualified equipment to be run on other tracks of same class without the use of IWS.
- For Class 6 and cant deficiencies up to **5 inches**, IWS testing requirement has been replaced with simulation of performance with no requirement for re-qualification on other tracks.
- Technical Sub group will establish predefined analytical anomalies representative of minimally acceptable conditions for each track class. *See Item G4*

Simulation of vehicle performance over the developed analytical geometry as well as over actual track, along with acceleration measurements, will be used to extend equipment qualification to untested tracks.

Item G3-2: Revision of Acceleration Criteria

Carbody Accelerations:

- Passenger and non-passenger carrying equipment
- Transient vs. sustained
- Trend Removed (on sustained accelerations)
- CFR 213.333 and CFR 213.345 values same
- Daily ARMS testing revised (AMTRAK proposal)

Truck Stability Issues:

- 0.30g RMS Limit
- Filtering
- Time duration

Status: No proposals for Main Body at this time - discussion ongoing 10

Item G3-3: Revision of Wheel-to-Rail Forces in VTI Limits Table of CFR 213.333

- Proposed NAL limits with dependency on vehicle weight.
- FRA recently presented a summary of research indicating dependency of NAL limits on vehicle weight; Analysis shows that the current single limit may be sufficiently conservative for all vehicle types.
 - Technical Subgroup will have recommendations to present at June 21, 2005 Task Force meeting.
- Single wheel unloading limit to 20% of nominal static weight.

Item G4: Reconsider Adequacy of Track Geometry Limits

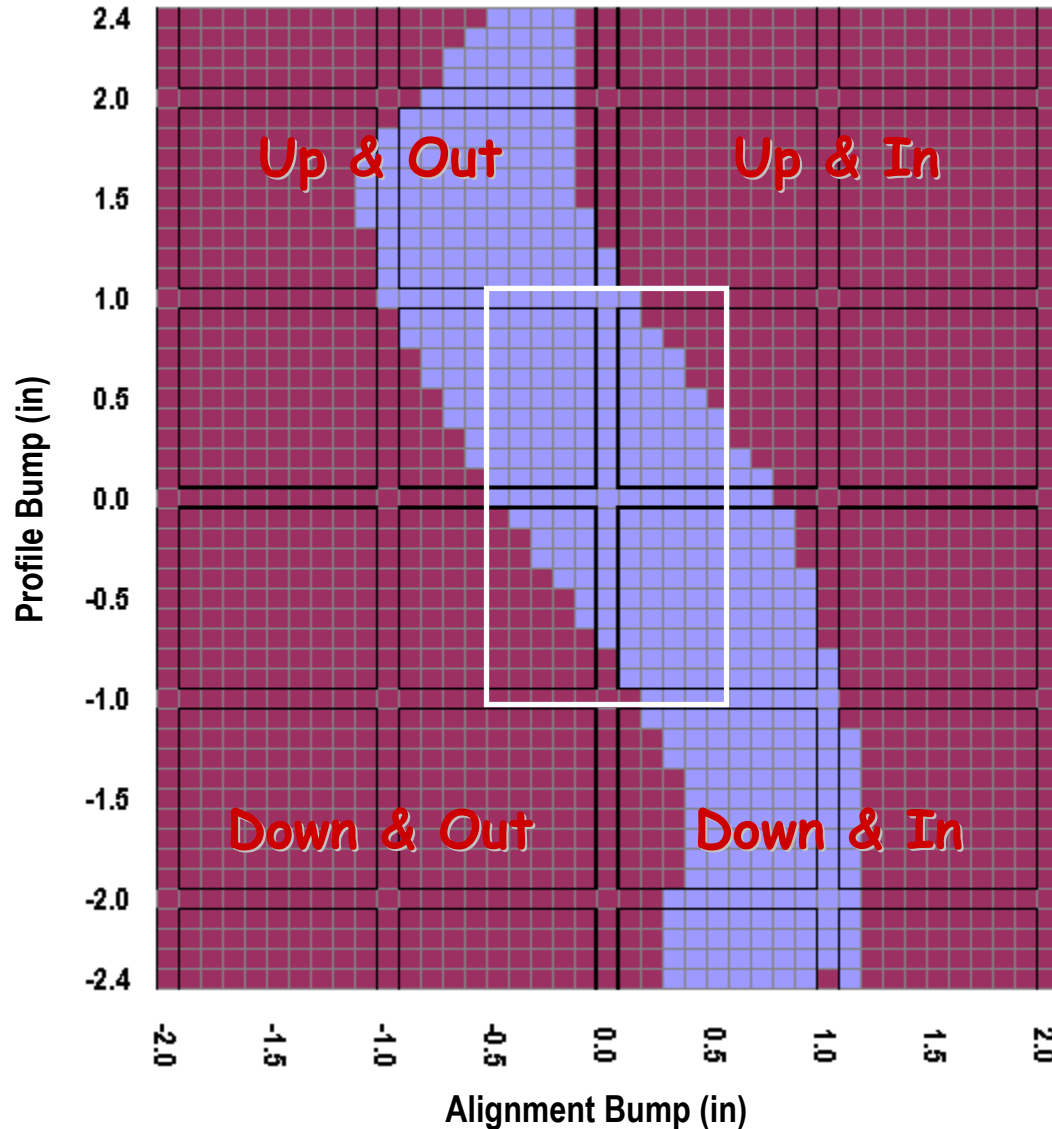
- Establishing a matrix of track conditions over which vehicles will be modeled and to validate relationship between VTI Safety Limits and Track Geometry Limits.
- Analysis will consider limits for short warp (Class 6 & higher).
- Determining relationship between track geometry and cant deficiency (by modeling)
- Computer models will include Acela Power Car, Acela trailer, AEM-7, FRA T-16 and Amtrak Amfleet.

Item G-4

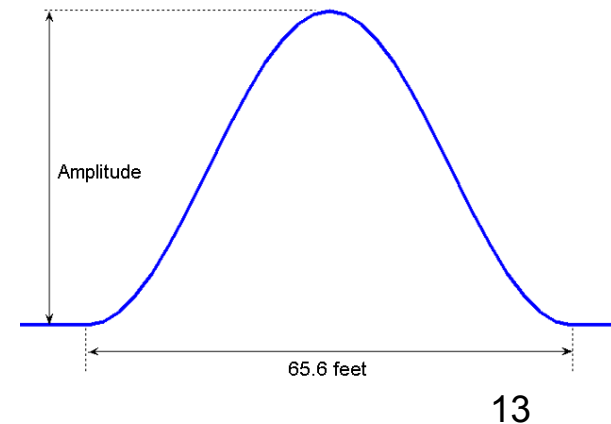
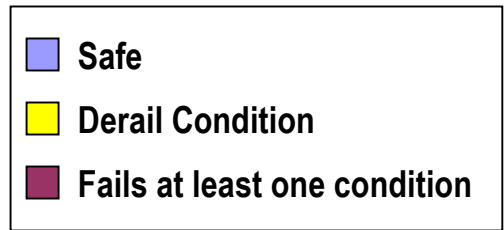
ACELA POWER CAR

All Failure Conditions

- Velocity: 146.38mph
- Cant Deficiency: 9"
- Superelevation: 6"
- Curve: 1 Degrees
- Coef of Friction: 0.5



Legend



ITEM G5-1 – Cant deficiency regulations

- Propose to establish minimum requirements of track maintenance based on maximum cant deficiency allowed. Actual Minimum Class maintained will be determined by further analysis

Max CD	Proposed Minimum Class Maintained ¹
3	1
4	2
5	3
6	4
7	5
8	6
9	7
10	8
12	9*

¹ Class of track is set at the highest level required either by speed or cant deficiency

ITEM G7 – Elimination of Class 9 Reference*

APTA Recommendation:

- The PSVTI Task Force should recommend deleting all requirements and references to Class 9 track standards from the current Track Safety Standards and reducing the maximum operating speed for Class 8 track to 150 MPH.

Status:

At April 7, 2005 Task Force meeting, members accepted proposed regulatory language. Will be forwarded to Working Group in September for consideration.

END