

Railroad Safety Advisory Committee Meeting
Washington Plaza
10 Thomas Circle, N.W., Washington, D.C. 20005
(At Massachusetts Avenue and 14th Street)

September 21, 2006

PASSENGER SAFETY TRACK VEHICLE INTERACTION TASK FORCE



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RSAC TVI Task Force Update

Objectives

- Revise *49 CFR 213, Part G*, issued in 1998 to reflect experience gained in qualifying several vehicles for high speed and cant deficiency operation (Acela, MARC-III, ALP-46, Comet 5)
 - Consolidate inconsistencies between track and equipment rule, low and high speed track safety standards, and requirements within the track safety standards
 - Establish necessary safety limits on wheel profile and truck equalization
 - Revise qualification requirements for high speed/high cant deficiency operation
 - Revise safety criteria (acceleration and wheel force limits)
 - Revise inspection, monitoring and maintenance requirements
 - Revise track geometry limits for high speed
 - Establish consistent requirements for high cant deficiency operations

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- Changes are intended to maintain and improve public safety without introducing unnecessary burdens on industry
 - Realistic limits and requirements that are practically attainable
 - Regulations that do not inhibit new technology and are reflective of existing equipment with established safety record
 - Consensus from Industry, Labor and Government

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Approach

- Establish technical subgroup to address safety (derailment) criteria
- Consider foreign practices, results of current research, and VTI test data
- Use models to conduct dynamic simulation studies
- Examine impact of each proposed change on current operations
- Achieve consensus on all items amongst TF
- Submit recommendations as one package to Working Group

Consolidate Inconsistencies Between Track and Equipment Rule

- Different and repetitive qualification requirements for acceleration limits in *49 CFR 213, Part G* and *49 CFR 238*
- TF developed language for consolidating these limits into *49 CFR 213, Part G*
 - Cross-references established with *49 CFR 238*
 - Duplicate requirements removed

Establish limits on Wheel Profile and Truck Equalization

- Currently, no controls exist on truck equalization
 - Safety concern over response to warped track
- Currently, no controls on wheel profile
 - Wheel profile affects vehicle response
 - conicity relates to truck hunting
 - flange angle protects wheel climb derailment
- TF agreed that these issues be controlled by industry standards

Status: Items handed off to APTA PRESS Working Groups. Awaiting APTA's proposed standards.

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Revise Qualification Requirements

- Refine tests and analyses required for qualification at each track class speed and cant deficiency
 - Instrumented Wheelset System (IWS), carbody acceleration, static lean
 - Procedures for using computer simulations in place of expensive IWS tests when appropriate
 - Define Minimally Compliant Analytical Track (MCAT) to evaluate safety performance
 - Requirements for operating previously qualified vehicles on other routes
- Develop consistent qualification and monitoring requirements between low and high speed standards and within respective standards

Revise Safety Criteria (Acceleration and Wheel Force Limits)

- Established separate acceleration limits for passenger and non-passenger carrying equipment to reflect occupant safety
 - Different limits for single events and repeated harmonic events
 - Revised truck lateral acceleration limit (hunting)
- Revised wheel-rail force limits (NAL, Vmin) based on current research

Revise Track Geometry Limits for High Speed

- Track surface and alignment limits based on VTI performance
- Computer modeling/simulation of in-service vehicles
- Combined track geometry defects, short warp
- Elimination of Track Class 9 to RPA
- Reduction of maximum speed for Track Class 8 to 150 mph

Establish Requirements for High Cant Deficiency Operations

- Develop regulatory provisions for qualifying vehicles for high cant deficiency on all classes of track
- Develop consistent qualification and monitoring requirements between low and high speed standards and within respective standards
- Establish tighter track geometry limits for high cant deficiency operations
 - Separate limits for high cant deficiency to address reduction in safety margin

Item	Issue	Tech. Resp.	Tech Work	TF AiP	Draft Text	TF Rec	WG App	Inform APTA
G1-1	Wheel Flange Angle	APTA	✓		🕒			
G1-2	Wheel Conicity	APTA	✓		🕒			
G1-3	Truck Equalization	APTA	✓		🕒			
G2	VQT - IWS	TSG	✓	✓	🕒			
	Route	TSG	✓	✓	🕒			
	Simulations (Route, Chapter XI)	TSG	✓	✓	🕒			
	Accerometer	TSG	✓	✓	🕒			
	Submittals/Approval	TSG	🕒		🕒			
G3-1	213/238 Consolidation	TF	✓	✓	✓	🕒		
G3-2	Carbody Acceleration	TSG	✓	✓	🕒			
	Truck Acceleration	TSG	✓	✓	🕒			to do
	In-Service Monitoring (IWS, ACC)	TSG	✓	✓	🕒			
	In-Service Monitoring (TGMS)		🕒		🕒			
	Reporting	TSG			🕒			
G3-3	NAL	TSG	✓	✓	🕒			to do
	SWVL ratio	TSG	Ⓟ	✓	🕒			to do
	Review All W/R Forces	TSG	Ⓟ	✓	🕒			to do
G4	Review Track Geometry Limits	TSG	🕒					
	Track Geometry - Vehicle Performance	TSG	🕒					
	Short Warp Limits	TSG	🕒					
	Track Geometry and Cant Deficiency	TSG	🕒					
	Simulation - Analogous to AAR Chapter XI	TSG	🕒					
G5	Cant Deficiency Regulatory Process	TSG	✓	✓	🕒			
	Lean Test	TSG	✓	✓	🕒			
G6	Elimination Class 9	TF	✓	✓	✓	🕒		
	Reduce Class 8 to 150 mph	TF	✓	✓	✓	🕒		

✓ Work Completed



Work in Progress



Depends on Other Work

RSAC TVI Task Force Update

Overall Status

- TF is approximately 90% finished with technical work
- TF is preparing:
 - 1) “Recommendations for Rule Changes” document
 - 2) Technical report with documentation supporting these recommendations and work done
- 4 more TF meetings anticipated