



Railroad Safety Advisory Committee



Rail Failure Working Group Activity Update

to the

50th Railroad Safety Advisory Committee Meeting

October 31, 2013
Washington, DC



Rail Failure Working Group



RSAC Task 12-01

Assigned September 27, 2012

Purpose: To consider specific improvements to the Track Safety Standards (TSS) or other responsive actions designed to monitor rail life and reduce the adverse risks of rail failure.



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**Last Working Group Meeting
July 30-31, 2013
Washington DC**



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Meeting Accomplishments

- Discussed industry best practices in rail maintenance.
- Finalized proposed Rail Failure Prevention Program.
- Determined additional R&D requirements.
- Identified RSAC recommendations for Task 12-01.



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Working Group Consensus

(FRA to Issue as Guidance to Industry)

Rail Failure Prevention Program

We propose that track owners consider developing and maintaining a Rail Failure Prevention Program for rail in the following mainline track:

- Class 2 track not within yard limits with annual tonnage of at least 25 MGT, or is a HAZMAT route;
 - Class 3 track not within yard limits with annual tonnage of at least 25 MGT, is a HAZMAT route, or has regularly scheduled passenger service; and
 - Class 4 and 5 track
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The Rail Failure Prevention Program contains the following:

1. Rail head wear guidelines;
 2. Guidelines which address the identification and management of visible rolling contact fatigue damage and improve rail performance;
 3. An inspection plan that includes rail head wear measurements for comparison with established guidelines and means for identification of visible rolling contact fatigue damage;
 4. Corrective actions to be taken when rail head wear guidelines are exceeded or visible rolling contact fatigue damage is identified; and
 5. Training for the application of the procedures listed above.
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Rail Failure Prevention Program Content

We recommend that the Rail Failure Prevention Program contain the following elements:

Rail head wear guidelines which include:

1. Head wear guidelines that consider rail section, class of track, alignment and other criteria as determined by the track owner.
2. Specification of the measurement methods to be used and definition of reference points for these measurements.

B. An inspection plan to measure rail head wear that considers alignment, class of track, and other criteria as determined by the track owner.



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C. Guidelines for the management of visible rolling contact fatigue damage and improved rail performance. Procedures may include lubrication, friction modification or grinding.

1. Lubrication or friction modification practices should consider train traffic, alignment, curvature length, and grade;
 2. Rail grinding or other techniques that address maintenance of rail head profile to improve rail surface conditions and reduce visible rolling contact fatigue damage.
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D. Guidelines which address the monitoring of visible rolling contact fatigue damage which include the following:

1. Inspection procedures to identify areas of visible rolling contact fatigue damage. The inspection procedures should include prioritization methods for assessing the severity of these conditions; and
 2. Establishment of inspection frequencies to monitor development of visible rolling contact fatigue damage that consider alignment, track class, and other factors as determined by the track owner.
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E. Guidelines for applying rail grinding or other techniques which improve rail head profile and visible rolling contact fatigue damage. The guidelines should identify:

1. The techniques utilized;
 2. Application of these techniques considered taking into account alignment, tonnage, class of track, or other factors as determined by the track owner; and
 3. Prioritized corrective action for areas of significant visible rolling contact fatigue damage to reduce defect development.
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F. Recordkeeping procedures for each inspection performed under the Rail Failure Prevention Program. The record should include the following items:

1. The limits of the territory inspected
2. Head wear measurements
3. Areas identified to have significant visible rolling contact fatigue damage and type of rail surface degradation.

G. Guidelines for rail service life monitoring which consider class of track, tonnage, rail section, rail wear, visible rolling contact fatigue damage, defect development, rail failure history and other factors as determined by the track owner.



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- H. Recommended corrective action to be taken when rail head wear or visible rolling contact fatigue damage guidelines are exceeded.
 - I. A system or process that is designed for the recording and tracking of rail defects and rail failure incidents with the capability to identify locations with sudden or accelerated failure rates.
 - J. Training for employees involved in the application of the written Rail Failure Prevention Program, with provisions for periodic retraining for those individuals.
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Additionally, the Working Group recommends that FRA should dedicate resources to the following research items:

- Assist with development of TTCI Rolling Load Machine (Simulate RCF Development on Rail and Wheels)
- Develop improved rail steel
- Improve the understanding of worn rail to better forecast rail life
- Improve rail inspection technologies
- Develop performance-based predictive modeling software to better control rail life through improved preventive maintenance processes
- Study the effects of rail grinding on defect development



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Questions?