



# Railroad Safety Advisory Committee

---



## Railroad Safety Advisory Committee Meeting

### Rail Wear

September 27 , 2012  
Washington, DC





# Railroad Safety Advisory Committee

---



On Wednesday, July 11, 2012, a freight train derailed and 2 cars of ethanol breeched resulting in a fire and evacuation of residents and businesses within a one mile radius of the accident location.

On August 21, 2012, a loaded coal train derailed and 8 cars overturned releasing their contents and fatally injured two people.

---



# Railroad Safety Advisory Committee



Photos of rail sections associated with the two derailments.



# Railroad Safety Advisory Committee

---



## Preliminary Investigation Results:

1. The July derailment rail showed 9/16" vertical head loss.
  2. The August derailment rail showed 9/16" gage side curve wear.
  3. Both rail had significant gage corner rolling contact fatigue (RCF).
  4. Both rail failed as a result of detail fracture defect development.
  5. Both incidents were investigated by NTSB.
-



# Railroad Safety Advisory Committee

---



## **FRA Initiative**

### **RSAC Rail Failure Working Group**

### **Task No.: 12-01**

**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 head wear.

---



# Railroad Safety Advisory Committee



**Description:** Review and understand:

- Railroad engineering instructions concerning rail performance management.
- The factors that influence rail life.
- The impact of train dynamics on rail.
- The effects of head wear on rail strength and structural integrity.
- The effects of rolling contact fatigue on rail and how it can impact rail defect development.



# Railroad Safety Advisory Committee



**Issues requiring specific report:** Determine whether current industry rail head wear management systems are adequate or should be standardized.

## **Action Items:**

- Review current industry rail wear maintenance processes (grinding, lubrication)
- Review how rail replacement programs are determined (age of steel, wear, accumulated tonnage)



# Railroad Safety Advisory Committee



---

**Issues requiring specific report:** Identify an approach to establish the state of understanding of issues related to rail performance utilizing known experts in the field of rail research. Determine methods to improve the effectiveness and efficiency of rail performance management and rail life extension, and provide recommendations as necessary.

## **Action Items:**

- Discuss rail wear measurement data and how the data is utilized in rail management (rail life prediction, allowable wear limits)
  - Identify future FRA research initiatives (technology)
-





# Railroad Safety Advisory Committee



**Issues requiring specific report:** Specifically, determine whether, and if so how, rail life and performance management can be improved to reduce the rate of worn-rail failures and related derailments.

## **Action Items:**

- Determine effectiveness of current processes and best practice (industry rail maintenance programs)



# Railroad Safety Advisory Committee



**Issues requiring specific report:** Determine whether new approaches to rail head wear limits should be developed and/or formally standardized.

## **Action Items:**

- Review industry standards for wear limits (class of track, AREMA standards)
- Discuss effect of RCF and rail wear in defect development (structural integrity, train dynamics)



# Railroad Safety Advisory Committee



**Issues requiring specific report:** Evaluate whether methods for non-destructive rail inspections can be improved in terms of inspection effectiveness and efficiency.

## **Action Items:**

- Review current industry rail inspection technologies (ultrasonics, induction)
- Identify and discuss evolving technologies and future development (guided waves, EMAT)



# Railroad Safety Advisory Committee

---



**Questions?**

---