



SOFA



http://www.fra.dot.gov/rrs/pages/fp_1781.shtml

SOFA

Switching Operations Fatality Analysis

"Goal is ZERO Switching Fatalities."



Background

- Formed in February 1998 at request of FRA.
 - Analyze switching fatalities to train and engine-service employees.
 - Determine Possible Contributing Factors and issue findings.
- Voluntary, non-regulatory and educational effort.
- Not an RSAC
- Representatives from:
 - Association of American Railroads (AAR)
 - American Short Line and Regional Railroad Association (ASLRRA)
 - Brotherhood of Locomotive Engineers and Trainmen (BLET)
 - Federal Railroad Administration (FRA)
 - United Transportation Union (UTU)
- Has issued three reports covering 179 cases.
 - October 1999
 - August 2004
 - March 2011



Methodology

- **Case Selection:** The selection criteria for the 2011 report are all fatalities from 2004 through 2009 involving Train, Yard, and Engine (TY&E) employees who were:
 - Fatally injured while on the ground.
 - Fatally injured while riding on the outside of train equipment.
- **Case Review:** The SWG followed four principle steps in reviewing a case: 1) Case presentation, 2) Recording the facts into a database, 3) Discussion, and 4) Agreement on one or more as Possible Contributing Factors (PCFs).
- **Classification of Cases:** After review of all cases, the SWG classified the cases into one or more of the SOFA 1-5 categories. A case could also qualify for one or more of 15 different SSH categories.
- **Analysis – Searching for Commonalities:** After case classification, the process of discovering ‘commonalities’ began. Commonalities, as used in this report, are shared characteristics among cases that may lead to a common solution.
- **Identification of Preliminary Findings:** The SWG, based on the consensus of its members, developed preliminary findings. The SWG hosted a SOFA Safety Forum (SSF) with senior leaders in the railroad industry to participate in the further development of these findings and to increase SOFA awareness.
- **Development of Findings:** The SWG used various ideas from the SOFA Safety Forum and contributed its own thoughts to complete development of the findings.



Development of Findings

- To develop the findings, the SWG discussed the ideas generated from the SSF about a month after it took place. The SWG used various ideas from the SSF and contributed its own thoughts to produce much of the content in Chapter 3 of the SOFA report.
- Each finding in Chapter 3 includes a discussion of issues and remedies, and ends with a conclusion or a SOFA Safety Advisory Statement.
- The findings on SOFA 1, SOFA 2, and SOFA 4 ends with a conclusion. This means the report is evaluating the effectiveness of recommendations from previous reports, and there are no new recommendations or remedies beyond those provided in the 1999 SOFA Report.
- All other findings include a discussion of issues and corresponding remedies. Some of the remedies discussed may be deemed prohibitive to fully implement. Therefore the SWG offers ideas to mitigate these issues. The SWG urges railroads to evaluate further the suitability of remedies for their particular operating environment. **A remedy should not be taken as a mandate for changing or writing new rules and is not intended to be exhaustive.**
- Some findings end with a SOFA Safety Advisory Statement. These statements highlight remedies that advise an immediate change to a procedure or an action to improve safety.



Most Prominent SOFA Categories

SOFA Category	Description	Pre-SOFA (1992-2000)	Post-SOFA (2001-2009)	Total
SOFA5	FE had 1.5 years of experience or less or had inadequate training.	17	15	32
SSHCC	Special Switching Hazard: Close Clearance.	11	18	29
SSHIH	Special Switching Hazard: Industrial Hazard.	10	16	26
SOFA3	Lack of or inadequate job safety briefing.	11	12	23
SOFA1	Adjusting knuckles, adjusting drawbars, or installing EOT	15	6	21
SOFA4	Mixing hand and radio signals or specific distances were not given.	17	3	20
SSHST	Special Switching Hazard: Struck by Mainline Train.	7	13	20

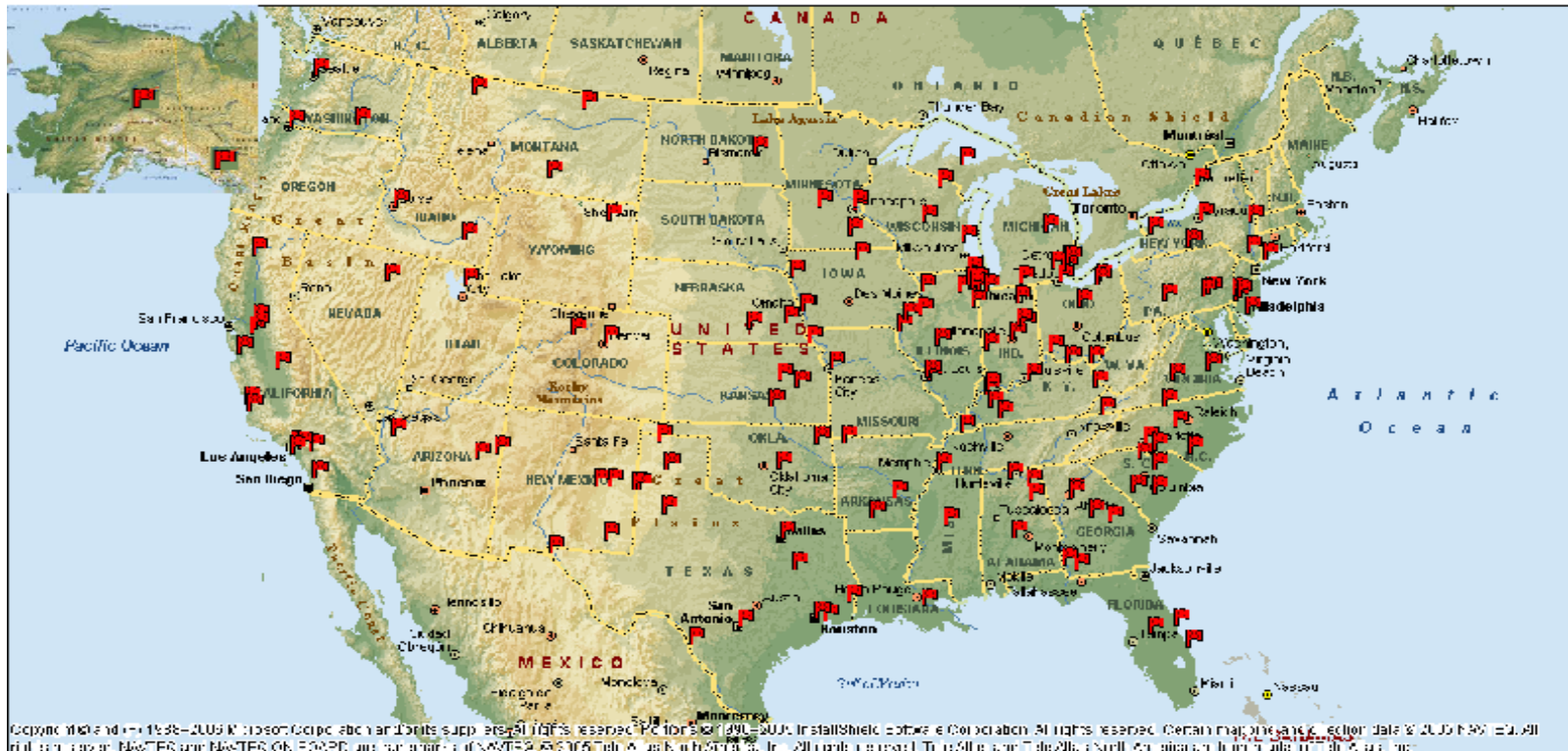
SOFA1 & SOFA4 are not discussed in this presentation due to improving trends.



SOFA Fatalities: Two Time Periods

Before and After the First SOFA Report

SOFA Fatalities Across the United States 1992 through 2009





Inexperienced Employee - SOFA 5



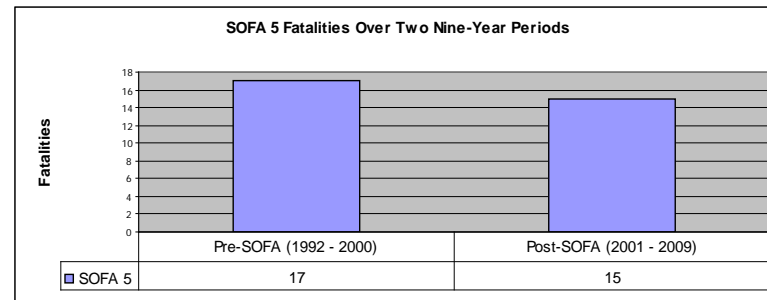


Inexperienced Employee - SOFA 5

32 FATALITIES

Largest SOFA category

- No Substantial Progress Has Been Made.
 - 1992-2000: 17 cases
 - 2001-2009: 15 cases
- There has been little progress on reducing fatalities for SOFA 5 incidents since the SOFA Operating Recommendations were released in the first SOFA report in October 1999. With 32 cases, SOFA 5 is the largest category of SOFA fatalities. The chart below displays the number of SOFA 5 fatalities over two nine-year periods (Pre-SOFA versus Post SOFA). It shows little progress has been made on reducing SOFA 5 fatalities between the two nine-year periods.



- What can we do?
 - First and foremost, if you are an experienced railroader, share that knowledge!
 - If you don't know ask.
 - Support and seek OJT and Positive remedial learning.
 - Other suggestions?

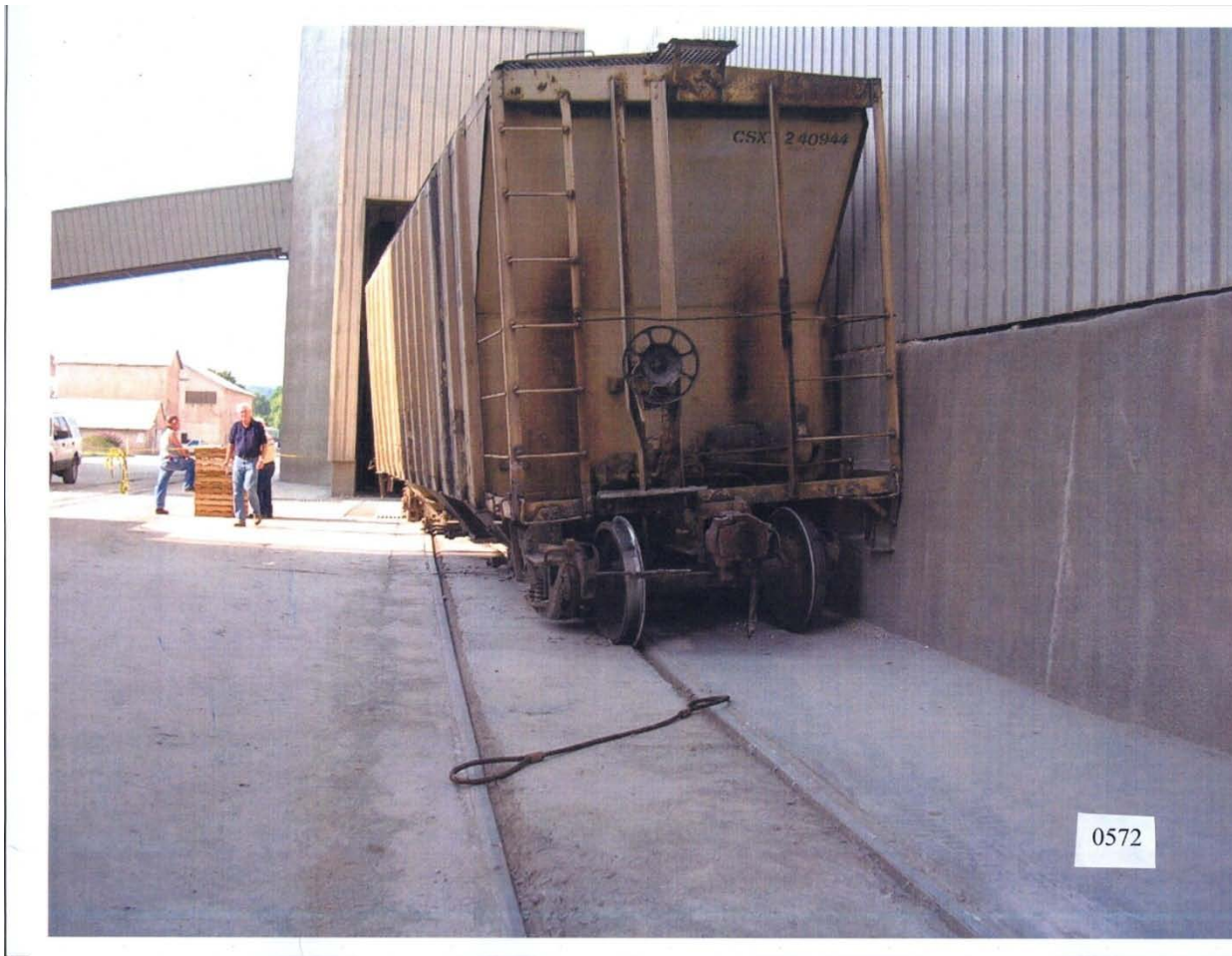


Close Clearance





Close Clearance





Close Clearance



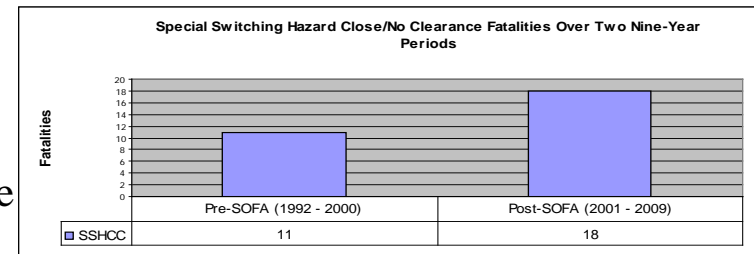


Close Clearance

29 FATALITIES

2nd largest SOFA category

- Trend (Growing Issue):
 - Pre-SOFA (92 – 00): 11
 - Post-SOFA (01 – 09): 18
- Close/No clearance is the second largest category of SOFA fatalities. The chart below displays the number of close/no clearance fatalities over two nine-year periods, pre-SOFA versus post-SOFA. It shows fatalities due to close/no clearances are a growing issue and could imply the guidance provided in the August 2004 SOFA Update has had little or no effect.
- What can we do?
 - Switch defensively, focus on the task at hand, always be aware of your surroundings, and the situation.
 - Discuss the location and potential for close/no clearances in job briefings.
 - Eliminate close/no clearance conditions, and provide safe clearance in future engineering projects, provide adequate signage.
 - Report close/no clearance issues through established procedures. Responsible parties must follow up on these reports, ensure the workforce is notified, and take corrective action.
- Other suggestions?





Hazards on Industrial Track





Hazards on Industrial Track





Hazards on Industrial Track





Hazards on Industrial Track

- Trend (Growing Issue):

- Pre-SOFA (92 – 00): 10
- Post-SOFA (01 – 09): 16

26 FATALITIES

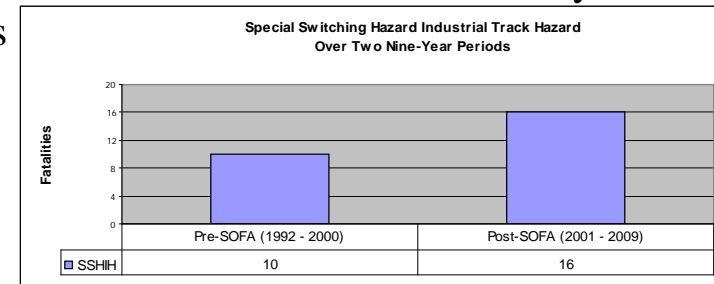
3rd largest SOFA category

Industrial Track Hazard is a new category of SOFA. It is the third largest category of SOFA fatalities. The chart displays the number of fatalities involving industrial track hazards over two nine-year periods (Pre-SOFA versus Post SOFA). It shows fatalities involving industrial track hazards are a growing issue.

Nine employees died in collisions with motor vehicles while riding equipment over road crossings.

What can we do?

- Report hazards through established procedures. Responsible parties must follow up on these reports, ensure the workforce is notified, and take corrective action.
- Provide co-workers with “heads-up” warning if operating conditions at an industry change or they have never been in the industry
- Empower employees to stop work when hazards that endanger the crew are identified. Notify the proper authority immediately. Safety concerns must override the desire to complete a task.
- Advise industry to educate and instruct vehicle operators on separation of non-railroad personnel from railroad switching operations.
- Inspect industries and enforce industry track agreements.





Job Briefing - SOFA 3



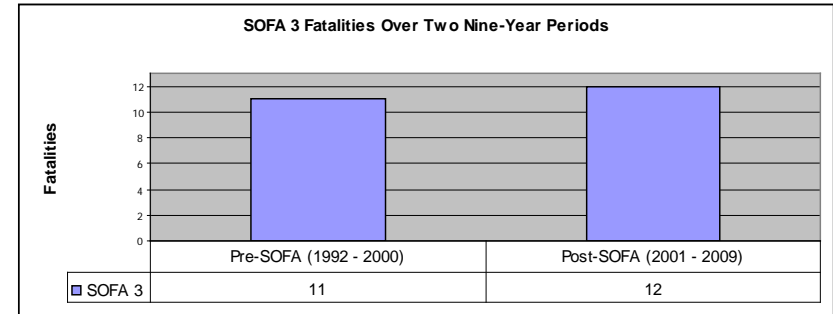
In sync for safety



Job Briefing - SOFA 3

23 FATALITIES

- No Substantial Progress Has Been Made.
 - 1992-2000: 11 cases
 - 2001-2009: 12 cases
- There has been no substantial progress on reducing fatalities related to SOFA 3 incidents since the SOFA Operating Recommendations were released in the 1999 SOFA report. SOFA 3 is the fourth largest category of SOFA fatalities. The chart illustrates SOFA 3 fatalities over two nine-year periods (Pre-SOFA versus Post-SOFA), and an increase from 11 to 12 fatalities between the two periods.
- What can we do?
 - Make it clear, and ask that all understand. Two way communication is key.
 - Each crew member should consider the following five questions for each task, or when the work changes from a previous job briefing:
 - Who? Identify the person who will act.
 - What? Identify what act is about to be done.
 - Where? Identify where the action will occur.
 - When? Identify when the action occur.
 - Why? Identify why the act is being done.
- Constantly update job briefings - because things change.
- Other Suggestions?





Struck by Mainline Train





Struck by Mainline Train

20 FATALITIES

Tied for 5th largest
SOFA category

Trend (Growing Issue):

- Pre-SOFA (92 – 00): 7
- Post-SOFA (01 – 09): 13

Struck by Mainline Trains, with 20 cases, is tied for the sixth largest category of SOFA fatalities. The chart displays the number of struck by mainline train fatalities over two nine-year periods (Pre-SOFA versus Post-SOFA). It shows fatalities for TY&E employees who are struck by mainline trains is a growing issue and a cause for concern. It implies the guidance provided in the August 2004 SOFA Update has had little or no effect.

Fifteen of these fatalities occurred in the dark.

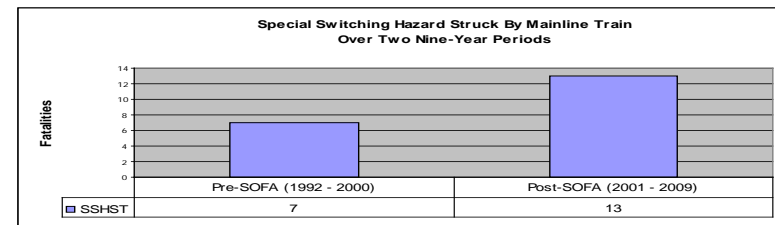
Thirteen occurred in months December through February.

What can we do?

- Use multiple warning methods - radio, horn, bell, headlight, etc.
- Determine a safe location to stop and do a roll by.
- Dismount to the field side.
- Plan an escape strategy.
- Job brief, before dismounting locomotive.

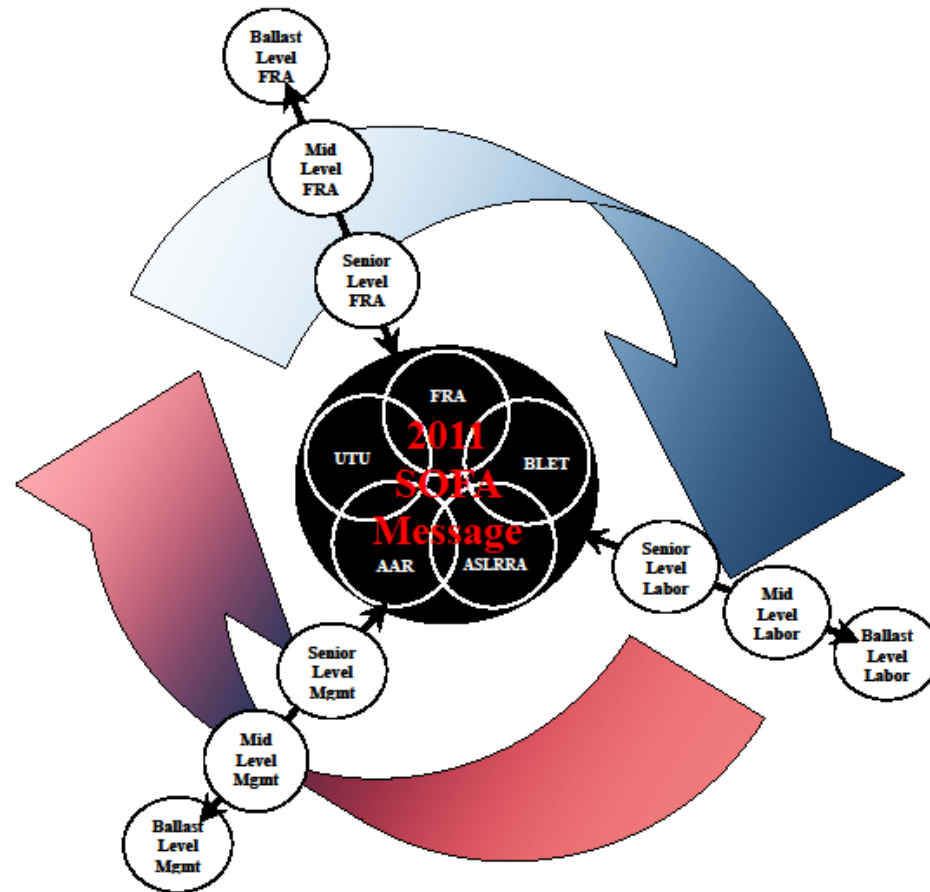
What do people do to get the struck by mainline trains?

Other suggestions?





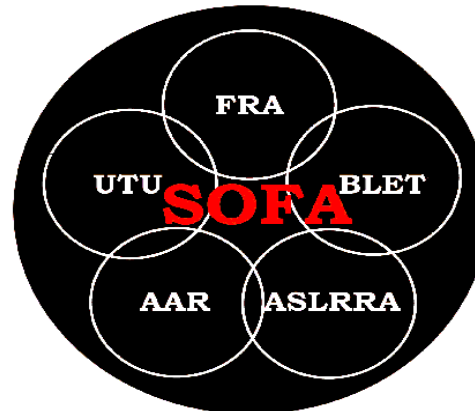
SOFA Communication





What's Next?

- The report is being dispersed throughout the country.
- Think about the SOFA Safety Advisories and the 5-Lifesavers: What can **you** do to improve the safety of others and yourself?
- Get involved with your co-workers and discuss the SOFA Safety Advisories and Lifesavers.
- We all want to reach the goal of “Zero Switching Fatalities.”





Contact Information

AAR - <http://www.aar.org/>

ASLRRA - <http://www.aslrra.org/>

BLET - [http:// www.ble-t.org/](http://www.ble-t.org/)

FRA - <http://www.fra.dot.gov/>

UTU - <http://utu.org/>