

# SOFA Switching Fatality and Severe Injury Update – 2014 First Quarter

PLEASE POST IMMEDIATELY

**380 days since last SOFA fatality; 0 Switching Fatalities in 2014 through March 03** *page 17*

## Six SOFA Switching Safety Issues

- This *Update* focuses on six switching safety issues
- These issues are contained in SOFA Advisories and Lifesavers...remedies for why Fatalities occur:
  1. Inexperienced employees
  2. Close clearances
  3. Industrial hazards
  4. Job safety briefings
  5. Struck by mainline trains
  6. Going between rolling equipment
- Clearly, switching safety involves more than just six issues...and the order of listing does not indicate importance



## Switching Operations Fatality Analysis (SOFA)

- A voluntary, non-regulatory, railroad-safety partnership comprised of representatives from AAR, ASLRRA, BLET, FRA, and UTU
- Seeks to prevent switching Fatalities through education based on facts about causes. SOFA is not part of a rulemaking or regulatory process
- Recognizes that all have responsibility for switching safety: employees, managers, and regulators
- SOFA's goal is Zero Switching Fatalities achieved through education and non-punitive interactions among stakeholders

## **Six SOFA Safety Issues...as based on Advisories and Lifesavers/Recommendations**

These six SOFA safety issues are based on SOFA Advisories and Lifesavers/Recommendations. Please consult SOFA reports for a complete discussion of each Advisory and Lifesaver/Recommendation. The six issues involve major reasons why employees have recently been harmed in switching...and how such harm can be prevented. Risk reduction also involves complying with company policies and staying alert. (The following material is based on the *2011 SOFA Report*. Please refer to the report for additional information and context.)

### **#1: INEXPERIENCED EMPLOYEES**

While SOFA often classifies as *inexperienced* those Fatality events where the deceased had 1.5 years of craft experience or less, *inexperienced* can have a broader meaning in Fatality events – as an employee not having sufficient and recent familiarity with a location to perform work safely.

### **#2: CLOSE CLEARANCES**

For permanent, the best remedy is removal. Otherwise provide appropriate signage. Report close/no clearances through established procedures. Use a job briefing to discuss close/no clearances, both permanent and temporary. When switching, be aware of the physical environment – always think about changes since last switched.

### **#3: INDUSTRIAL HAZARDS**

Industrial track hazards occur when a structure, vehicle, temporary obstruction, or other hazards (such as close/no clearances) presents risk on industrial track. Industrial plant employers and employees, and truck drivers, can create these hazards. Periodic inspections should be made of industrial conditions. Any hazards should be reported immediately.

### **#4: JOB SAFETY BRIEFINGS**

Ongoing communication is crucial among employees during the entire time switching operations are being performed, including periods when tasks are changing or when anomalies occur. A job briefing is a two-way exchange of information to reach an understanding of the tasks being performed. Particular attention should be given to inexperienced employees.

### **#5: STRUCK BY MAINLINE TRAINS**

Employees must be aware of risks associated with doing work along mainline track, particularly during darkness and in winter months. Use job briefings prior to exposure from mainline track.

### **#6: GOING BETWEEN ROLLING EQUIPMENT**

Equipment if not secure can roll in on employees. Equipment should be separated and tied down. Inform crew of intention to go between equipment.

## **Six SOFA Safety Issues...as based on Advisories and Lifesavers/Recommendations**

**SOFA Lifesavers/Recommendations were developed in 1999; Advisories, in 2011**

- **Advisories and Lifesavers/Recommendations were developed by SOFA to prevent the causes of switching Fatalities. Not all causes, but operational causes associated with the majority of Fatalities. For total safety, SOFA urges compliance with all railroad instructions and awareness of all risks.**
- **Advisories and lifesavers/Recommendations are not rules. Intention was to provide information about safe switching practice based on reasons why Fatalities occurred. Not to establish rules resulting in possible discipline.**
- **Published in October 1999, Lifesavers/Recommendations were based on review of 76 switching Fatality cases, occurring from January 01, 1992 through July 01, 1998. Published in March 2011, additional safety issues were identified and called ‘Advisories’ to differentiate in name from the ‘Lifesavers/Recommendations’. The Advisories were based on re-review of the 76 cases, plus 103 subsequent cases through December 2009.**
- **While there are five Advisories and five Lifesavers/Recommendations, there are eight safety issues addressed. Two of the Advisories and Lifesavers/Recommendations overlap. As SOFA reviewed more cases, it became apparent that Lifesavers/Recommendations 3 and 5 related respectively to job briefings, and inexperienced employees were not effective enough to prevent Fatalities involving these issues. Additional treatment was needed in the form of Advisories.**
- **On the following pages, six of the eight SOFA safety issues are presented as based on SOFA Advisories and Lifesavers/Recommendations. The two issues not mentioned are related respectively to Lifesavers/Recommendations 2 and 4: being struck by other equipment being switched; and combining hand and radio signals and/or not giving specific distances to move equipment. While still important, these issues have not been frequently associated with recent Fatalities.**

# **#1: INEXPERIENCED EMPLOYEES**

## **Advisory 1: Inexperienced Employee (also SOFA Lifesaver/Recommendation 5) – section 3.3.4 of 2011 SOFA Report**

Since the 1999 Report, the SWG [SOFA Working Group] emphasis on mentoring has not achieved a substantial reduction in SOFA 5 fatalities. It is critical for the railroad industry to provide the inexperienced employee adequate OJT [on-the-job training]. Without abandoning the commitment to mentoring, the railroad industry should improve OJT to include targeted training for the inexperienced employee. Providing follow-up review of skills, and targeted training by the railroad industry enables an inexperienced employee to meet the demands of the job. Benefits may result from a review of OJT, and improved follow-up with inexperienced employees.

If experienced, share your knowledge. If inexperienced, or not familiar with a site, speak up and ask. Admitting lack of knowledge makes you smart!

### **Some Basic Points**

- Since the *1999 SOFA Report*, the SWG emphasis on mentoring has not achieved a substantial reduction in inexperienced employee fatalities. Clearly, additional approaches were needed.
- It is critical for the railroad industry to provide the inexperienced employee adequate On-the-Job-Training (OJT).
- Without abandoning the commitment to mentoring, the railroad industry should improve OJT to include targeted training for the inexperienced employee. Providing follow-up review of skills, and targeted training by the railroad industry enables an inexperienced employee to meet the demands of the job.
- Mentoring can be challenging. It is not always possible to pair experienced with inexperienced employees, as in smaller operations. Just having experience does not necessarily translate into good mentoring. Criteria for mentors should be established. Mentors should be good listeners, and provide positive and reinforcing feedback on inadequacies.

# **#1: INEXPERIENCED EMPLOYEES (continued)**

## **Some Basic Points**

- Inexperienced employees have responsibility to learn from mentors.
- Training should always seek improvement. Sharing of best practices is essential.
- Crafting an effective behavioral rule, practice, or procedure that can be assessed for inexperienced employee compliance is difficult. Thus, in training going beyond a rulebook approach is necessary. Developing metrics to assess training quality presents challenges.
- Principles of Crew Resource Management should be included in new employee training.
- Classroom training should be balanced with on-the-job training (OJT). OJT should nurture, providing positive instruction and feedback on inadequacies. Concerns of inexperienced employees should be considered.
- Shove moves may be particularly challenging to inexperienced employees.
- SOFA essentially classifies as *inexperienced* those Fatality events where the deceased had 1.5 years of craft experience or less. But *inexperienced* has a broader meaning in Fatality events. Such as whether employee (s) had sufficient and recent familiarity with a location to perform work safely.
- Inexperience may be a growing concern as hiring waves replace retiring employees. And crew size dwindles.
- Productivity expectations should adjust to employee experience.
- Crew composition should pair an inexperienced employee with experienced employees when possible. Excess risk may exist for crews with one or more inexperienced employees.

## **#2: CLOSE CLEARANCES**

### **Advisory 2: Close Clearances – section 3.5.6 of 2011 SOFA Report**

The SWG [SOFA Working Group] reemphasizes that removing the hazard is the best way to address close/no clearances. Yet, in many cases a railroad or industry will not be able to eliminate the close/no clearance condition. At the minimum, the SWG believes that proper signage should be implemented and be instructive to the employee. Additionally, the sign should be an appropriate distance from the close/no clearance location and on the same side. Signage must: (a) announce the clearance issue and (b) instruct the employee who is controlling the movement to dismount and remain dismounted from the equipment while passing the close/no clearance location. One method to determine the signage design, appropriate distance, and position may be to organize a management-labor working group.

### **Some Basic Points**

- Close and no clearances involve insufficient space:
  - No Clearance: Insufficient space to avoid being struck if passing or being passed by an object, structure, or equipment.
  - Close Clearance: Insufficient space to take evasive action to avoid being struck by moving equipment that derails into an object, structure, or other equipment.
- Close and no clearances can be permanent or temporary:
  - Permanent Close/No Clearance: A fixed structure that remains in the same location from day to day, such as a building, loading dock, fence, post, beam, or other permanent structure, that an employee passes.
  - Temporary Close/No Clearance: A movable object, including equipment on or near one track fouling another track, rolling stock on an adjacent track, stacks of cross ties, construction materials, and doors or gates left open, that passes by an employee or employee passes.
- Remedies include:
  - Eliminate when possible. Safety engineering (as elimination) is the favorable approach. Other approaches, such as behavioral, should be thought of as intermediate safety steps.
  - Sign with standardize signage, at an appropriate distance (not too close or far) and on the same side, with instructions on how to act.
  - Improve lighting.
  - Identify through maps, job briefings, transference of knowledge from experienced to inexperienced employees, inspection before action is taken, reporting with follow up, and reporting of close calls.
  - When operating look for close/no clearances, ride away from these hazards or dismount as appropriate, plan for possibility of a derailment with an escape strategy, and avoid distractions (unnecessary conversation, doing paperwork, or cellphone use).

## **#3: INDUSTRIAL HAZARDS**

### **Advisory 3: Industrial Hazards – section 3.6.5 of 2011 SOFA Report**

Railroads and industries need to have Industry Track Agreements, practices, or policies in place, and these should contain oversight and enforcement of the safety provisions. Railroads must provide employees with the tools and/or assistance to allow them to safely perform their work while within an industry.

Employees need to be empowered to make a decision to stop work when an unsafe condition presents itself. Employees engaged in switching operations must not ride railroad equipment through a grade crossing during a shove movement. Industries need to educate and instruct all vehicle operators concerning separation between their vehicle and railroad equipment by being attentive to movements in the industry. At the minimum, the SWG [SOFA Working Group] believes that proper education and instruction should be implemented by the industry. Additionally, signage and lighting should be appropriate for the crossing protection needed. Railroad managers must be educated to encourage employees to make a good faith effort to identify and report hazards at industries. Employees making a good faith effort to identify and report hazards will not be subject to discipline, discrimination, or harassment for doing so.

Report hazards through established channels and procedures. If conditions at an industry change, make others aware. Brief employees who have never, or recently, switched the site. Employees should stop work when hazards present danger. Safety, not task completion, comes first.

### **Some Basic Points**

- Railroads and industries need to have Industry Track Agreements, practices, or policies in place, and these should contain oversight and enforcement of the safety provisions. Railroads must provide employees with the tools and/or assistance to allow them to safely perform their work while within an industry.
- Employees need to be empowered to make a decision to stop work when an unsafe condition presents itself. Railroad managers must be educated to encourage employees to make a good faith effort to identify and report hazards at industries. Employees making a good faith effort to identify and report hazards will not be subject to discipline, discrimination, or harassment for doing so.

## **#3: INDUSTRIAL HAZARDS (continued)**

### **Some Basic Points**

- Employees engaged in switching operations must not ride railroad equipment through a grade crossing during a shove movement. Industries need to educate and instruct all vehicle operators concerning separation between their vehicle and railroad equipment by being attentive to movements in the industry
- Industrial track hazards occur when a structure, vehicle, temporary obstruction, or other hazards (such as close/no clearances) presents risk on industrial track. Industrial plant employers and employees, and truck drivers, can create these hazards. Periodic inspections should be made of industrial conditions. Any hazards should be reported immediately.
- These hazards can include, or result from:
  - **Industrial Track Agreements:** These agreements may not be current, require notification of a change in conditions, and/or may allow conditions to become unsafe due to changes over time. Systematic review of agreements is inconsistent across the railroad industry. Shippers/receivers utilizing the same industrial lead may have different industry track agreements.
    - Remedies include, but are not limited to, removing close/no clearances; ice and snow; and objects and debris fouling track. Performing needs assessment for lighting installation and maintenance. Marking private crossing clearly. Separation of train right-of-ways and motor vehicle roads. Separation of railroad and non-railroad employees. Empowering employees to stop work in the presence of hazards. Safety should take precedence over work completion.
  - **Inconsistent training and updating of plant circumstances:** Training in plant characteristics may be inconsistent. An employee who is unfamiliar with an industrial property may not be aware of the industrial hazards. Job aids such as maps usually do not exist.
    - Remedies include providing job aids (as maps), including hazard identifications and knowledge exchange between experience and less experienced employees in job briefings, inspecting site before switching, and sharing close-call episodes among employees.
  - **Collision with motor vehicles during shoving:** Fatalities have resulted from employees riding railroad equipment while shoving across an industrial grade crossing.
    - Remedies include advising non-railroad employees on separation of their activities and roadways from those of railroading, and installing and maintaining lighting.



## **#4: JOB SAFETY BRIEFINGS**

### **Advisory 4: Briefings – Job or Safety (also SOFA Lifesaver/Recommendation 3) – section 3.3.5 of 2011 SOFA Report**

The SWG [SOFA Working Group] believes ongoing communication is crucial among employees during the entire time switching operations are being performed, including periods when tasks are changing or when anomalies occur. A job briefing is a two-way exchange of information to reach an understanding of the tasks being performed.

Despite considerable efforts within the railroad industry, more than half of SOFA 3 fatalities in yards and industrial properties occurred when a job task changed and an update to the job briefing did not occur. The SWG believes more progress can be made in the area of work changes. When work changes occur, the employees involved may not maintain currency with these changes; thus, they may be unaware of the tasks to be performed, and this may place them in peril. The railroad industry must remain vigilant regarding fatalities, and when work changes occur, employees must regroup, take appropriate steps to provide protection, and not proceed until an update to the job briefing is done.

Job brief any time the nature of work changes from what was planned or anticipated. Constant monitoring of work in progress, and constant communication among all crewmembers, are two good ways to determine if a job briefing is needed. When briefing, two-way communication is essential. All crewmembers should feel free to speak and be understood. There is no ‘one size fits all’ for the content of a briefing, because a job briefing to be effective must address specific tasks and local conditions. However, at a minimum, a job briefing should include: who will act, what act is to be done, where act will occur, when act will occur, and why act is being done.

### **Some Basic Points**

- Ongoing communication is crucial among employees during the entire time switching operations are being performed, including periods when tasks are changing or when anomalies occur. A job briefing is a two-way exchange of information to reach an understanding of the tasks being performed.
- More than half of SOFA 3 (Job Briefings) fatalities in yards occurred when a job task changed and an update to the job briefing did not occur.
- More progress can be made in the area of work changes. When work changes occur, the employees involved may not maintain currency with these changes; thus, they may be unaware of the tasks to be performed, and this may place them in peril.

## **#4: JOB SAFETY BRIEFINGS (continued)**

### **Some Basic Points**

- RR industry must remain vigilant regarding fatalities, and when work changes occur, employees must regroup, take appropriate steps to provide protection, and not proceed until an update to the job briefing is done
- A job briefing is specific to upcoming work, and its interrelated and independent tasks. A safety briefing is more general, often occurring at the beginning of a shift.
- A job briefing is important in planning before work begins. And in continuing monitoring of work-in-progress for anomalies.
- At a minimum, a job briefing is needed when the nature of work changes. Or there are safety concerns
- Recognize when the nature of work changes. Think about risks that could occur when work is not being done as originally anticipated or planned.
- A job briefing involves all crew members. Everyone should understand the exact nature of work to be performed.
- All crew members should be empowered to stop work and request a job briefing. All crew members regardless of seniority should participate and be heard. Work should not begin again until safety issues are resolved.
- A job briefing cannot be standardized, generalized, or simply rule based. Switching acts can be unique to circumstances and location. A briefing must be adequate, specific to the acts. Fatalities have resulted even after a job briefing because the briefing was not adequate.
- At a minimum, a job briefing should include:
  - **Who will act**
  - **What act is to be done**
  - **Where act will occur**
  - **When act will occur**
  - **Why act is being done**

## **#5: STRUCK BY MAINLINE TRAINS**

### **Advisory 5: Struck by Mainline Train – section 3.7.5 of 2011 SOFA Report**

The SWG [SOFA Working Group] reemphasizes that communication is essential to eliminating fatalities related to Struck by Mainline Trains. Fatalities occur when employees are unaware of risks associated with doing work along mainline track – particularly at times of darkness and during winter months. Therefore, the railroad industry should insist upon consistent use of multiple methods to warn employees about oncoming on-track movements. Equally, warnings should be made to the approaching on-track movement of an employee's location when a crew member is outside of the locomotive cab. In addition, the railroad industry should consider improving employee visibility when performing work on the ground.

Employees must use job briefing procedures before dismounting the locomotive or doing work along mainline track to establish a safe method for performing their work. When possible, employees must dismount to the safe side. Empower employees to establish a safe location when stopping and/or performing work when on or near mainline track. The railroad industry must support employees in the use of individual discretion as part of an effort to determine a safe location to perform work.

### **Some Basic Points**

- Communication is essential to eliminating fatalities. Fatalities occur when employees are unaware of risks associated with doing work along mainline track, particularly during darkness and winter months.
- Insist upon consistent use of multiple methods to warn employees about oncoming on-track movements.
- Warnings should be made to the approaching on-track movement of an employee's location when a crew member is outside of the locomotive cab.
- Consider improving employee visibility when performing work on the ground.
- Use job briefing procedures before locomotive dismount or work along mainline track to establish a safe method for performing work.
- When possible, employees must dismount to the safe side.
- Empower employees to establish a safe location when stopping and/or performing work when on or near mainline track.
- The RR industry must support employees in the use of individual discretion as part of an effort to determine a safe location to perform work.

## **#5: STRUCK BY MAINLINE TRAINS (continued)**

### **Some Basic Points**

- Darkness and winter months are associated with this Fatality type. Awareness may be compromised and degraded. Darkness may impair depth perception. Use multiple warning methods (as radio, horn, bell, and headlight), both visual and auditory. A single warning from one device can be misconstrued or forgotten. Reflective clothing, and clothing that does not impair hearing and peripheral vision, are desirable.
- Mainline inspections (as locomotive, roll-by, and hotbox) can involve risks. Employees should exercise discretion about the location and timing. A job briefing should be conducted before any member exits the cab. At a minimum, a this job briefing should include:
  - Determination of a safe location to stop.
  - If inspection can be performed from the safe field side.
  - If not, can dismounting be from the field side.
- If not, there must be awareness of all approaching movements, consideration of time to dismount, avoidance of fouling track, recognition that warnings may not be adequate, and planning of a worst-case scenario that includes an escape route.
- Communication may not be adequate when work is performed along a mainline. Effective communication must exist among crew, between crews, dispatchers, and yardmasters. Effective communication includes:
  - Utilizing established programs like Crew Resource Management.
  - Not exiting the cab without verbalizing intentions.
  - Contact with, and providing warnings, for crew members outside the cab.
- Establishing a safe zone outside the cab for communication with the crew, other crews and movements, dispatcher, and yardmaster.

## #6: GOING BETWEEN ROLLING EQUIPMENT

- Four of last eight Fatalities (January 2011 through March 2014) likely involved going between rolling equipment
- This safety issue involves SOFA Lifesaver/Recommendation 1, a safety precaution for fouling track in this situation
- ...and was addressed by: *FRA Safety Advisory 2011–02* and *FRA Advisory 2013–03*
- Perform safety steps before going between rolling equipment!

### Switching Fatalities, January 2011 through March 03, 2014

Based on preliminary information, four of the last eight Fatalities likely involved going between rolling equipment

Year	Count	Date	Days between Fatalities	City	State	Reviewed or Preliminary	<u>Brief Description</u> (Risks other than those listed are often involved. Case classification marked 'preliminary' is subject to revision. 'SSH' = Special Switching Hazard)
2011	1	02/08/11	120	Kankakee	IL	reviewed	Advisory 2:Close Clearances (cars left afoul)
	2	07/25/11	167	Bedford Park	IL	reviewed	Lifesaver/Recommendation 1: Going Between Rolling Equipment. SSH: Unsecured Cars
	3	08/15/11	21	Kansas City	KS	reviewed	Lifesaver/Recommendation 1: Going Between Rolling Equipment. SSH: Miscellaneous
	4	09/08/11	24	Botkins	OH	reviewed	Lifesaver/Recommendation 1: Going Between Rolling Equipment. SSH: Unexpected Movement of Railcars
2012	5	01/30/12	144	Gary	IN	preliminary	Shoving was direction of movement
	6	05/28/12	119	Kenmare	ND	preliminary	Advisory 2:Close Clearances (cars left afoul)
	7	07/31/12	64	Mason City	IA	preliminary	Lifesaver/Recommendation 1: Going Between Rolling Equipment
2013	8	02/16/13	200	Cleveland	OH	preliminary	Employee fell from car being shoved
2014	--	--	380	--	--	--	No Fatalities through March 03, 2014

## **#6: GOING BETWEEN ROLLING EQUIPMENT (continued)**

**Recommendation 1** (also addressed by Federal Railroad Administration’s *Safety Advisory 2011-02 and 2013-03*)

**Any crew member intending to foul track or equipment must notify the locomotive engineer before such action can take place. The locomotive engineer must then apply locomotive or train brakes, have the reverser centered, and then confirm this action with the individual on the ground. Additionally, any crew member that intends to adjust knuckles/drawbars, or apply or remove EOT device, must insure that the cut of cars to be coupled into is separated by no less than 50 feet. Also, the person on the ground must physically inspect the cut of cars not attached to the locomotive to insure that they are completely stopped and, if necessary, a sufficient number of hand brakes must be applied to insure the cut of cars will not move.**

### **Lifesaver 1**

Secure equipment before action is taken.

### **Discussion 1**

This recommendation emphasizes the importance of securing the equipment. A thorough understanding by all crew members that the area between cars is a hazardous location, whether equipment is moving or standing, is imperative.

### **Examples of Lifesaver/Recommendation 1**

#### **Botkins, OH, September 08, 2011**

When a 16,800 ton southbound iron ore train was on a 0.5 percent grade, a following train crew was instructed to tie down its train and help the stalled train over the summit. After uncoupling the EOTD and attaching the single helper engine, the helper conductor released his “Three Point Protection” and the stalled train was moved 4700 feet, stopping with 40 of the 125 cars over the crest. After communicating with the head-end crew, the helper conductor detached his locomotive – instructing the helper engineer to back away from the train “half a car”. The helper engineer backed up and stopped about 30 feet from the train. The helper conductor was, again, granted “Three Point Protection.” He then safely coupled the air-hose of the EOTD and released his protection. As he was walking back to the helper engine, the rear portion of the standing train started to roll northward toward the standing helper engine. Perhaps unaware of the slack running out, toward his locomotive, the helper conductor may have placed himself in the foul, crossing the track, and was coupled between the rear car of the stalled train and the front knuckle of the locomotive.

#### **Bedford Park, IL, July 25, 2011**

A remote control operation switch crew (RCO) was coupling track 16 in Bedford Park, IL, from the west end. The track had a declining grade, from east to the west. The conductor was on the north side of the track and controlling the movement. The switchman was on the west end of the locomotive protecting the point. The conductor made three couplings and was 17 car lengths in the body of the track when a radio signal of “Man Down” was transmitted over the radio. The conductor was found lying on his back over the north rail, with his legs in the gauge of the track and between the 17th and 18th cars ahead of the locomotive with the couplers crossed with a fatal injury of his left lower abdomen.

# **GOING BETWEEN ROLLING EQUIPMENT (continued)**

## **FRA Safety Advisory 2013–03: Kicking Cars and Going Between Rolling Equipment During Flat Switching Operations.** Excerpted from *Federal Register / Vol. 78, No. 86 / Friday, May 3, 2013 / Notices / 26110-26112*

### **DEPARTMENT OF TRANSPORTATION**

#### **Federal Railroad Administration**

#### **[Safety Advisory 2013–03]**

#### **Kicking Cars and Going Between Rolling Equipment During Flat Switching Operations**

**AGENCY: Federal Railroad Administration (FRA), Department of Transportation (DOT).**

**ACTION: Notice of Safety Advisory.**

**SUMMARY:** A fatality occurred during a railroad switching operation that involved a railroad employee kicking cars and subsequently going between rolling equipment. In response, FRA is publishing this Safety Advisory 2013–03 to make recommendations to railroads regarding the adoption of car-handling procedures during flat switching operations at certain locations and to re-emphasize the importance of following procedures when going between rolling equipment due to the hazards involved. FRA previously made related recommendations to railroads and their employees regarding going between rolling equipment in Safety Advisory 2011–02.

*Recommended Railroad Action:* In light of the above discussion, and in an effort to maintain a heightened sense of vigilance among railroads and their employees who conduct switching operations, FRA recommends that railroads: (1) Review with their employees the circumstances of the fatal incident described in this Safety Advisory 2013–03. (2) Evaluate locations where flat switching operations are conducted and identify those where the physical characteristics and the types of cars being switched heighten the possibility that cars will roll out toward the employees conducting such operations. After identifying such locations, FRA recommends that railroads adopt procedures requiring that cars be shoved into couplings rather than kicked during such operations in an effort to lessen the potential safety risks, particularly when employees have to go between equipment. (3) Review with their employees, including management employees, **SOFA Safety Recommendation #1** [emphasis added], Adjusting Knuckles, Adjusting Drawbars, and installing End of Train Devices, reproduced above, and communicate its procedures implementing that recommendation to employees working in yards or other locations where the possibility of entering between rolling equipment exists. FRA recommends that railroads place emphasis on the portion of **SOFA Safety Recommendation #1** [emphasis added] discussing the need to ensure that equipment not attached to the locomotive is stopped, and is secured with handbrakes when necessary, before employees go between rolling equipment. Inherent in complying with **SOFA Safety Recommendation #1** [emphasis added] is recognition of the physical characteristics of the track on which switching operations are being conducted and the rolling characteristics of the type of equipment being switched, particularly as related to the handling of loaded tank cars. (4) Re-emphasize the recommendations contained in previous Safety Advisory 2011–02 with all of their employees, including railroad management. FRA encourages railroad industry members to take actions that are consistent with the preceding recommendations, and to take other complementary actions to help ensure the safety of the Nation's railroad employees.

**Please read *FRA Safety Advisory 2011–02* and *FRA Safety Advisory 2013–03***

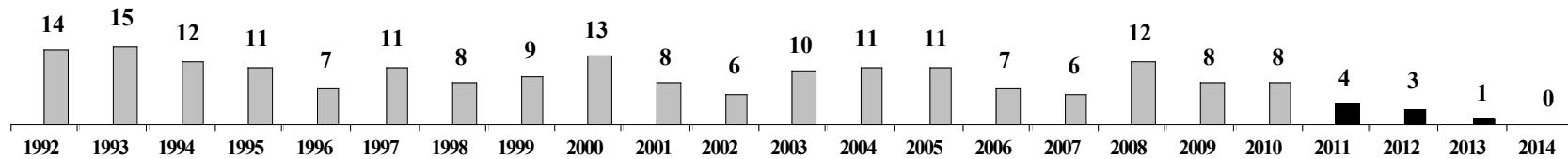
## **DATA SECTION – 2014 First Quarter Update**



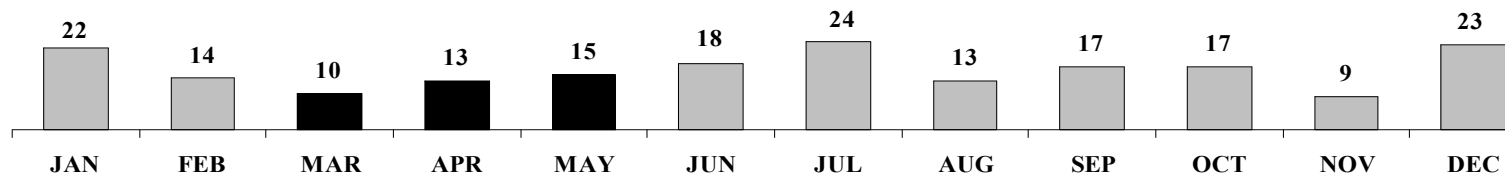
# Data Section: Switching Fatality History Update – 2014 First Quarter

- **0 Fatalities in 2014 through March 03**
- **1 Fatality in 2013**
- **3 Fatalities in 2012**
- **4 Fatalities in 2011**
- **Fatality counts are historically low over the last 3 years and approximately two months**

**195 Fatalities, by year: 1992 through 2013, full year; 2014, part year through March 03**  
 Fatalities were historically low in 2011 through 2013...and lower counts continue into 2014



**195 Switching Fatalities, by month: January 01, 1992 through March 03, 2014**  
 Although Fatalities have been relatively lower in March, April, and May...there is always risk in switching!



# Switching Fatality Narratives, 2011 through 2013

## One Switching Fatality in 2013 (Preliminary summary, not based on investigation)

### February 16, 2013 – CWRO – Cleveland, OH

A 50 year-old conductor switching cars inside a steel mill fell from the car he was riding; and was subsequently run over by the equipment. The incident occurred at approximately 5:00 pm (local time) on Saturday.

Comment based on preliminary information: Shoving was the direction of movement. Employee fell from car, which is a Special Switching Hazard (SSHET). This SSH, involving slipping, tripping, or falling (not necessarily while riding cars), is involved in about 10 percent of switching Fatalities.

\*\*\*\*\*

## Three Switching Fatalities in 2012 (Preliminary summaries, not based on investigation)

### January 30, 2012 – GRW – Gary, IN

About 6 pm, a three person switching crew (conventional – not RCL) was making a move in an industry with a cut of cars and using two tracks (#2 & 2.5). They shoved 19 East into TK2. The “helper” trainman was watching the cut – protecting the move from the east end. A cut was made and the engine, a slug unit and 4 cars came west out of TK 2 to clear. The switch was then lined for TK 2.5 by the foreman, he mounted the North side of the move (nearest the cars on TK2) and began to shove east down TK2.5. The foreman was killed when his shove came into contact with the cut left on the West end of TK2 – where it merges with TK2.5. Foreman was in his late 50’s and had 10 or so years of seniority. Crew was familiar with the industry site, and had been there the night before making a similar move.

Comment based on preliminary information: Shoving was the direction of movement. Shoving involves special challenges to employees engaged in switching, especially less experienced employees (although apparently not a factor in this case).

### May 28, 2012 – CP – Kenmare, ND

A conductor and engineer of a westward CP Rwy train were in the process of setting off 27 cars into track 2 of a small yard at 2:05 a.m. local time. They had left the remainder of their train on the main track near the west end of the yard. After appropriate switches were lined, and as the conductor – who was riding the point of the leading car – began moving into track 2, he was struck and killed by cars out to foul on track 1. It is reported that the conductor had about 7 years of service with almost 6 as a MOW employee. The move was estimated to be moving at approximately 4 mph. This location is about 52 miles NW of Minot, ND.

Comment based on preliminary information: Appears related in part to SOFA Advisory 2 (close/no clearance): a temporary close clearance, cars left afoul.

### July 31, 2012 – UP – Mason City, IA

A 35 year-old conductor on a conventional switching crew was crushed when two cars he had kicked into a flat switching track rolled back out and into him while he was preparing the next cut of cars to be kicked.

Comment based on preliminary information: Appears related in part to SOFA Lifesaver 1/Recommendation (going between rolling equipment): cars rolled back after joint was assumed to be made, or cars were not made secure.

# Switching Fatality Narratives, 2011 through 2013 (continued)

## Four Switching Fatalities in 2011 (Summaries based on investigation and SOFA review)

### February 08, 2011 – NS – Kankakee, IL

A conventional yard switching crew (Engineer, Conductor and Student Conductor-In-Training) was using the lead during a flat switching operation and kicking cars from west to east. Lite engines, with conventional crew, asked to come up the lead from east to west and after permission was given and switching was stopped conductor who was using the lead told the lite engine crew to be careful about a car that was close to fouling the lead. The lite engine got by, restored the switch to track 19 for track 19 and left the 18 track switch lined for the lead – the fouling car was on track 18. During the subsequent shove move east on the lead, the lead car diverged into track 19 the conductor was crushed between the car he was riding and the car on track 18.

Comment based on SOFA review: SOFA Advisory 2: Close Clearances

### July 25, 2011 – BRC – Bedford Park, IL

A remote control operation switch crew (RCO) was coupling track 16 in Bedford Park, IL, from the west end. The track had a declining grade, from east to the west. The conductor has on the north side of the track and controlling the movement. The switchman was on the west end of the locomotive protecting the point. The conductor made three couplings and was 17 car lengths in the body of the track when a radio signal of “Man Down” was transmitted over the radio. The conductor was found lying on his back over the north rail, with his legs in the gauge of the track and between the 17th and 18th cars ahead of the locomotive with the couplers crossed with a fatal injury of his left lower abdomen.

Comment based on SOFA review: SOFA Lifesaver/Recommendation 1: Going Between Rolling Equipment. Special Switching Hazard: Unsecured Cars

### August 15, 2011 – BNSF – Kansas City, KS

A pitch catch RCL operation included a switchman who was in control of the movement, coupled between two rail cars in a hump yard bowl track while he was adjusting draw bars between two cars

Comment based on SOFA review: SOFA Lifesaver/Recommendation 1: Going Between Rolling Equipment. Special Switching Hazards: Miscellaneous

### September 08, 2011 – CSX – Botkins, OH

When a 16,800 ton southbound iron ore train on a 0.5 percent grade, a following train crew was instructed to tie down its train and help the stalled train over the summit. After uncoupling the EOTD and attaching the single helper engine, the helper conductor released his “Three Point Protection” and the stalled train was moved 4700 feet, stopping with 40 of the 125 cars over the crest. After communicating with the head-end crew, the helper conductor detached his locomotive – instructing the helper engineer to back away from the train “half a car”. The helper engineer backed up and stopped about 30 feet from the train. The helper conductor was, again, granted “Three Point Protection.” He then safely coupled the air-hose of the EOTD and released his protection. As he was walking back to the helper engine, the rear portion of the standing train started to roll northward toward the standing helper engine. Perhaps unaware of the slack running out, toward his locomotive, the helper conductor may have placed himself in the foul, crossing the track, and was coupled between the rear car of the stalled train and the front knuckle of the locomotive.

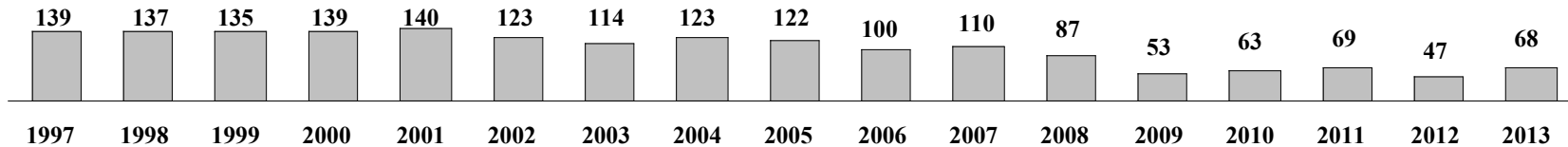
Comment based on SOFA review: SOFA Lifesaver/Recommendation 1: Going Between Rolling Equipment. Special Switching Hazard: Unexpected Movement of Railcars

# SOFA-defined Severe Injury Update

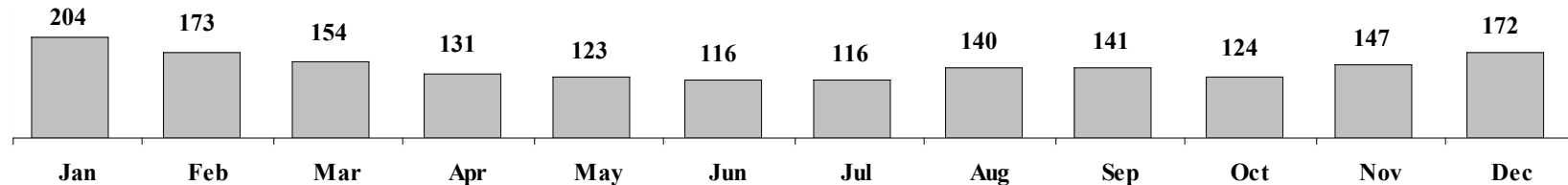
**Definition:** Based on its interests (i.e., potentially involving the same factors as Fatalities), *Severe Injuries* are defined by the SOFA Working Group as (1) potentially life threatening; (2) having a high likelihood of permanent loss of function, permanent occupational limitation, or other permanent disability; (3) likely to result in significant work restrictions; and (4) resulting from a high-energy impact to the human body. ‘Severe Injuries’ include amputation, dislocation of the neck, loss of eye, electric shock or burn, and fracture to any bone except the lower arm, fingers, foot, and toes. 1997 is the first year these Injuries to train and engine service employees can be determined as defined by the interest of the SOFA Working Group. For more information, see *Severe Injuries to Train and Engine Service Employees: Data Description and Injury Characteristics*. July 2001. Available electronically at the FRA’s website. Search on ‘SOFA’.

**Note:** The definition of SOFA-defined *Severe Injuries* is not to suggest that other injuries and illnesses resulting from operations are not also ‘severe’ and/or cause hardship to employees.

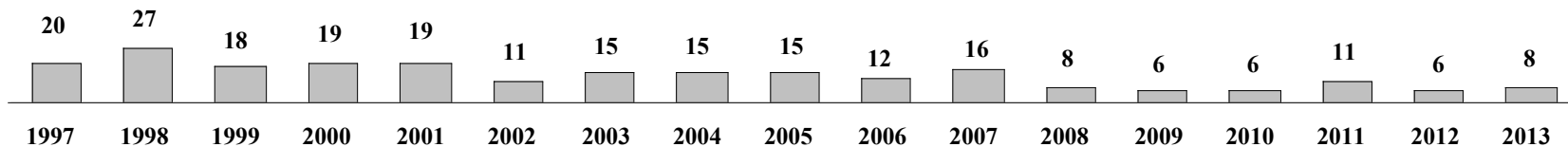
**1,769 SOFA-defined Severe Injuries, by year: 1997 through 2013**



**1,769 SOFA-defined Severe Injuries, by month, January 1997 through December 2013**



**232 Amputations (counts are included in Severe Injuries), by year: 1997 through 2013**



# 1,769 SOFA-defined Severe Injuries, by month and year, January 1997 through December 2013

Among *SOFA Updates*, counts previously presented may change based on revisions to FRA data. The latest month available from the FRA lags the calendar month of this *Update* by three months. FRA data used in this table were accessed on February 28, 2014

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	totals	average
<b>JAN</b>	11	13	16	15	21	12	11	11	20	10	14	13	6	6	8	9	8	<b>204</b>	12.0
<b>FEB</b>	17	15	9	9	9	13	17	14	10	6	15	12	4	7	9	2	5	<b>173</b>	10.2
<b>MAR</b>	14	12	17	11	10	10	13	10	9	9	11	5	5	4	5	6	3	<b>154</b>	9.1
<b>APR</b>	8	10	6	10	12	6	9	13	10	7	8	9	5	7	5	2	4	<b>131</b>	7.7
<b>MAY</b>	6	12	8	8	12	14	9	6	6	8	3	7	1	7	8	4	5	<b>124</b>	7.3
<b>JUN</b>	9	10	8	11	8	5	10	9	7	11	5	3	6	4	2	6	2	<b>116</b>	6.8
<b>JUL</b>	9	14	10	8	10	7	6	10	5	12	8	1	4	4	5	3	7	<b>123</b>	7.2
<b>AUG</b>	13	10	11	14	8	10	7	14	10	10	13	5	4	5	5	1	5	<b>145</b>	8.5
<b>SEP</b>	10	11	15	10	20	12	5	4	9	6	10	12	5	3	4	5	4	<b>145</b>	8.5
<b>OCT</b>	12	12	16	10	5	11	9	7	11	5	11	4	2	4	4	1	6	<b>130</b>	7.6
<b>NOV</b>	12	9	12	11	13	14	10	10	13	8	6	8	3	6	9	3	5	<b>152</b>	8.9
<b>DEC</b>	18	9	7	22	12	9	8	15	12	8	6	8	8	6	5	5	14	<b>172</b>	10.1
<b>totals</b>	<b>139</b>	<b>137</b>	<b>135</b>	<b>139</b>	<b>140</b>	<b>123</b>	<b>114</b>	<b>123</b>	<b>122</b>	<b>100</b>	<b>110</b>	<b>87</b>	<b>53</b>	<b>63</b>	<b>69</b>	<b>47</b>	<b>68</b>	<b>1,769</b>	<b>104.1</b>

## 232 Amputations (a type of Severe Injury), by month and year, January 1997 through December 2013

A type of SOFA-defined Severe Injury, Amputations are displayed separately because of the extreme trauma to employees engaged in switching, and the likelihood of permanent occupational and lifestyle limitations. Counts for Amputations are contained in the counts of SOFA-defined Severe Injuries (shown on previous page)

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	totals	average
<b>JAN</b>	1	0	2	1	0	0	2	2	2	0	1	1	1	0	2	0	0	<b>15</b>	0.9
<b>FEB</b>	0	1	0	1	0	2	1	2	0	2	1	0	0	1	2	0	1	<b>14</b>	0.8
<b>MAR</b>	3	4	3	2	1	1	3	1	2	1	0	1	1	0	0	1	0	<b>24</b>	1.4
<b>APR</b>	1	2	0	1	2	0	1	1	2	2	3	3	1	0	1	0	0	<b>20</b>	1.2
<b>MAY</b>	1	2	3	0	2	2	2	0	0	1	1	0	0	1	2	0	2	<b>19</b>	1.1
<b>JUN</b>	2	1	1	0	1	0	0	1	0	0	1	1	0	0	1	0	0	<b>9</b>	0.5
<b>JUL</b>	1	5	1	0	4	0	1	2	1	2	2	0	1	1	0	0	1	<b>22</b>	1.3
<b>AUG</b>	1	0	1	4	0	1	0	2	2	0	3	0	1	1	0	0	1	<b>17</b>	1.0
<b>SEP</b>	2	4	3	2	5	4	0	0	3	1	1	2	0	1	0	2	0	<b>30</b>	1.8
<b>OCT</b>	2	5	2	2	0	0	2	2	0	0	2	0	0	1	1	1	2	<b>22</b>	1.3
<b>NOV</b>	2	2	2	2	3	0	1	1	2	3	1	0	0	0	1	0	0	<b>20</b>	1.2
<b>DEC</b>	4	1	0	4	1	1	2	1	1	0	0	0	1	0	1	2	1	<b>20</b>	1.2
<b>totals</b>	<b>20</b>	<b>27</b>	<b>18</b>	<b>19</b>	<b>19</b>	<b>11</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>12</b>	<b>16</b>	<b>8</b>	<b>6</b>	<b>6</b>	<b>11</b>	<b>6</b>	<b>8</b>	<b>232</b>	<b>13.6</b>

# Switching Fatalities, SOFA-defined Severe Injuries, and Other Reportable Events

Source: Switching Fatalities from *SOFA Database*; all other series from FRA, accessed February 28, 2014

Note: Among *SOFA Updates*, counts previously presented may change based on revisions to FRA data

Year	SOFA Switching Fatalities	SOFA-defined Severe Injuries	Amputations (counts are included in SOFA-defined Severe Injuries)	All Employee On-duty Fatalities less SOFA Switching Fatalities	T&E Employee On-duty Fatalities less SOFA Switching Fatalities	All Reportable Employee Casualty to T&E Employees (includes Fatalities and Severe Injuries)	All Accidents	Human Factor Accidents	Highway-Rail Crossing Incidents	Trespasser Incidents (not at crossings)
1992	14	*	*	20	6	6,648	2,359	864	4,910	1,049
1993	15	*	*	32	16	5,649	2,611	865	4,892	1,032
1994	12	*	*	19	9	5,026	2,504	911	4,979	981
1995	11	*	*	23	10	4,215	2,459	944	4,633	955
1996	7	*	*	26	15	3,726	2,443	783	4,257	945
1997	11	139	20	26	10	3,489	2,397	855	3,865	**1,049
1998	8	137	27	19	8	3,642	2,575	971	3,508	**1,049
1999	9	135	18	22	12	3,835	2,768	1,031	3,489	924
2000	13	139	19	11	2	3,893	2,983	1,147	3,502	877
2001	8	140	19	14	6	3,561	3,023	1,035	3,237	915
2002	6	123	11	14	3	3,022	2,738	1,050	3,077	935
2003	10	114	15	9	3	2,935	3,019	1,230	2,977	896
2004	11	123	15	14	9	2,910	3,385	1,353	3,085	**878
2005	11	122	15	14	7	2,817	3,266	1,270	3,066	**878
2006	7	100	12	9	0	2,483	2,998	1,068	2,942	992
2007	6	110	16	11	4	2,520	2,693	1,047	2,778	877
2008	12	87	8	14	4	2,218	2,482	911	2,429	889
2009	8	53	6	8	2	1,972	1,912	656	1,933	760
2010	8	63	6	12	5	1,881	1,903	650	2,051	828
2011	4	69	11	17	11	1,733	2,022	746	2,059	775
2012	3	47	6	13	4	1,524	1,748	656	1,971	842
2013	1	68	8	14	3	1,704	1,758	664	2,087	918
% change										
2012 to 2013	--	--	--	--	--	11.8%	0.6%	1.2%	5.9%	9.0%

\*SOFA-defined Severe Injuries are defined only back to 1997

\*\*Counts happened to be identical for these successive years