PLEASE POST IMMEDIATELY

Work Safely in Winter Months…and all career long from hiring-on to retirement

SOFA Safety Discussion Items

Discuss these items anytime switching safety is addressed: safety briefings, meetings… even informal conversations

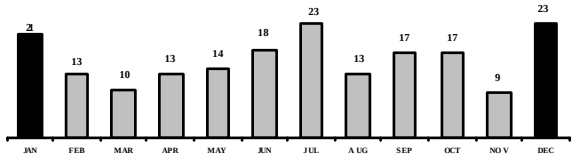
***Discussion item*: SOFA has issued Five Safety Advisories. These Advisories address causes of recent Switching Fatalities. How can each employee and manager at the ballast level be made aware of this life-saving information?**

***Discussion item*: How can this awareness and implementation occur in a working-together, educational, non-punitive manner?**

more discussion items, page 8

Winter brings increased risk for Fatalities and SOFA-defined Severe Injuries

Switching Fatalities, 1992 through December 15, 2011



pages 6-7

SOFA Education Section

We learn best when we learn together

pages 16-20

SOFA is a voluntary, non-regulatory, railroad-safety partnership comprised of representatives from AAR, ASLRRA, BLET, FRA, and UTU

SOFA seeks to prevent switching Fatalities through education based on facts about causes. SWG is not part of a rulemaking or regulatory process

SOFA recognizes that all have responsibility for switching safety: employees, managers, and regulators

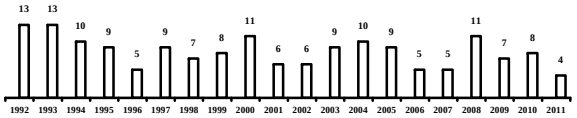
SOFA's vision is Zero Switching Fatalities achieved through education and non-punitive interactions among stakeholders

Four Switching Fatalities in 2011 through December 15. By comparison, there were eight Fatalities in this period in 2010

Feb 08…….Kankakee, IL
Jul 25…..…..Bedford Park, IL
Aug 15……...Kansas City, KS
Sep 08……..…..Botkins, OH

preliminary summaries, pages 2-3

Fatality counts part year, January 01 through December 15, 1992 through 2011



21 ways employees are harmed *pages 13-15*

SOFA-defined Severe Injury Update All Harm has Concern

- **51 Severe Injuries in first nine months of 2011 compared to 47 in 2010**
- **8 Amputations in first nine months of 2011 compared to 5 in 2010**

pages 12-15

Switching Fatality and Severe Injury Update – 2011 Fourth Quarter

Four Switching Fatality in 2011

through December 15, 2011

Preliminary summaries not based on investigation

Some material taken from Federal Railroad Administration's Safety Advisory 2011-02

1) February 08 – NS – Kankakee, IL

A NS conductor (age 43) with 5 years of experience died when he was crushed between the car he was riding, and another car left out to foul, at approximately 1:30 pm (local time).

Comment based on preliminary information:

'…car left out to foul…' is classified by SOFA as a *Temporary Close/No Clearance* and is addressed by **Advisory 2**. *Temporary Close/No Clearance* is defined by SOFA as: "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 an employee passes." For a full discussion of **Advisory 2** consult the *2011 SOFA Report, pages 27-33*.

2) July 25 – BRC – Bedford Park, IL

At approximately 12:30 a.m., a two-person RCL operation had shoved into a classification track and coupled to the westernmost car on the track. The RCL conductor on the crew was creating gaps in the cuts of cars (by pulling west) to adjust couplers and/or align drawbars with the intent of coupling the entire track of 28 cars and pulling it from the classification track. The conductor's helper was riding on the locomotive to provide point protection. The grade on the track was descending from east to west. During one such operation, when the conductor opened a gap, the cars standing to the east of him rolled westward into the cars attached to the locomotive, crushing the conductor. The deceased was 33 years old and had approximately 3½ years of railroad experience.

Comment based on preliminary information:

Event involved **SOFA Lifesaver/Recommendation 1**, discussed on *page 4*.

Four Switching Fatality in 2011 (continued)

through December 15, 2011

Preliminary summaries not based on investigation

Some material taken from Federal Railroad Administration's Safety Advisory 2011-02

3) August 15 – BNSF – Kansas City, KS

At approximately 1:30 p.m., a three-person remote control locomotive (RCL) crew consisting of a foreman, a helper, and a trainee entered a track in a bowl yard from the east and coupled onto a cut of cars. The foreman and the trainee boarded the locomotive to provide point protection and the helper, using his remote control transmitter, began stretching the cars eastward to identify gaps created by uncoupled blocks of cars. As the gaps were revealed, the helper repeatedly entered the space between the blocks of cars and made adjustments to knuckles and/or drawbars. Using his remote control transmitter, he then shoved the cars attached to the locomotive westward to couple the cars before continuing the process. The last time the helper went into a gap to adjust the knuckles and/or drawbars, the cars attached to the locomotive moved west and crushed the helper between the cars being coupled. The deceased was 52 years old and had approximately 17 years of railroad experience.

Comment based on preliminary information:

Event involved **SOFA Lifesaver/Recommendation 1**, discussed on *page 4*.

4) September 08 – CSX – Botkins, OH

At approximately 5:15 a.m., a single helper locomotive had coupled to the rear of a standing 125-car train with the intent of assisting the train's movement up an ascending grade. At some point, the movement stopped and the conductor of the single helper locomotive detrained and separated his locomotive from the train he and his engineer had assisted. After the separation, the conductor of the single helper locomotive reattached the end of train device to the last car of the assisted train, and announced to the crew of that train that he had finished his tasks. He then began to walk back to his locomotive. Shortly thereafter, the slack on the assisted train adjusted and the conductor was crushed between the rear car of the assisted train and his locomotive. The deceased was 59 years old with 5 years of railroad experience.

Comment based on preliminary information:

Event involved **SOFA Lifesaver/Recommendation 1**, discussed on *page 4*.

SOFA Lifesaver/Recommendation 1 (going between rolling equipment)

Based on preliminary information, three of the four Fatalities in 2011 involved Lifesaver/Recommendation 1: Bedford Park, IL, on July 25; Kansas City, KS, on August 15, and Botkins, OH, on September 08

Recommendation 1

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.

Action Items for Lifesaver/Recommendation 1 (Going between rolling equipment):

- **Consult company procedures for going between rolling equipment**
- **Consult FRA Safety Advisory 2011-02. Available at:** http://www.fra.dot.gov/downloads/safety/SA201102.pdf
- **Consult SOFA Reports for Lifesaver/Recommendation 1. Available at SOFA website (navigate at this site using the 'In this Section' tab in upper left corner):** http://www.fra.dot.gov/Pages/1781.shtml

Overview of the SOFA Five Safety Advisories

Consult the *2011 SOFA Report.* Particularly Chapter 3. Available at SOFA website (navigate at this site using the 'In this Section' tab in upper left corner): http://www.fra.dot.gov/Pages/1781.shtml

- **Advisory 1 (inexperience): If experienced, share your knowledge. If inexperienced, or not familiar with a site, speak up and ask. Admitting lack of knowledge makes you smart and protects you and crewmembers. On-the-job training for inexperienced employees, along with other ways to gain knowledge before harm results, are critical**

- **Advisory 2 (close/no clearance): 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 situation and surroundings**

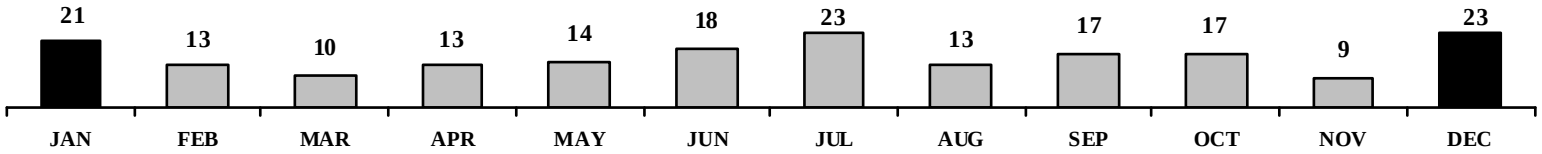
- **Advisory 3 (industrial hazards): Report through established procedures. If conditions at an industry change, make others aware. Brief employees who have never, or recently, switched the site. Employees should stop work when hazards present danger. Safety, not task completion, comes first. Safe separations should exist between railroad operations and trucks, loading/unloading devices, and non-railroad employees. Instruction about separation should be given to non-railroad employees**

- **Advisory 4 (job briefing): 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**

- **Advisory 5 (struck by mainline train): Multiple warning methods should be used to alert employees (radio, horn, bell, headlight, etc.). Be aware that night and winter months present greater risks. When performing a roll-by inspection, determine a safe location to stop. Hold a job briefing before dismounting. Plan for an escape strategy if work does not go as planned. Dismount on the field side whenever possible**

December and January…two of the highest months for Switching Fatalities
Important in cold weather states. But extended darkness also brings risk

191 Switching Fatalities, January 01, 1992 through December 15, 2011



Some Winter Month Facts

- **44 (23 percent) of the 191 Fatalities since 1992, occurred in December and January**
- **SOFA believes weather, colder temperatures, darkness, and ground conditions play a role. But likely there are other risk factors**
- **10 (50 percent) of the 20 Fatalities since 1992 involving being struck by mainline trains (Advisory 5), occurred in these two months**
- **Increases in Fatalities associated with industrial sites, on or fouling track, pull movements, and improper radio communication**
- **Difficult to tell if Fatalities spike around the holiday period…but it is always good advice to stay alert!**
- **Also possible that risk is elevated after the immediate onset of winter. In December in more northern winter states. In January, in more temperate winter states**

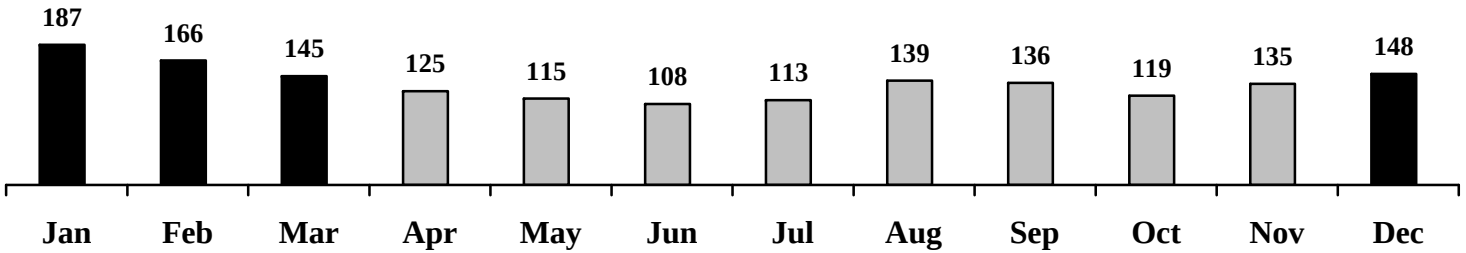
Action Items for Winter Months

- **Be sure winter clothing does not restrict movement, or degrade hearing and vision**
- **Identify any winter-related conditions affecting safety: ice can cause derailments; ice, snow, and mud can cause falling; snow can muffle sound and reduce visibility**
- **As well, work with industrial customers to address winter hazards**
- **Adjust productivity expectations based on darkness and weather**
- **Discuss winter conditions in safety briefings. Post any weather-related concerns on bulletin boards. Conduct winter-safety campaigns**
- **Place emphasis on reviewing Advisory 5 (struck by mainline trains)**
- **Don't lose alertness during the holiday period**

Work Safely in Winter Months…and all career long from hiring-on to retirement

December, January, February, and March…
four of the highest risk months for SOFA-defined Severe Injuries

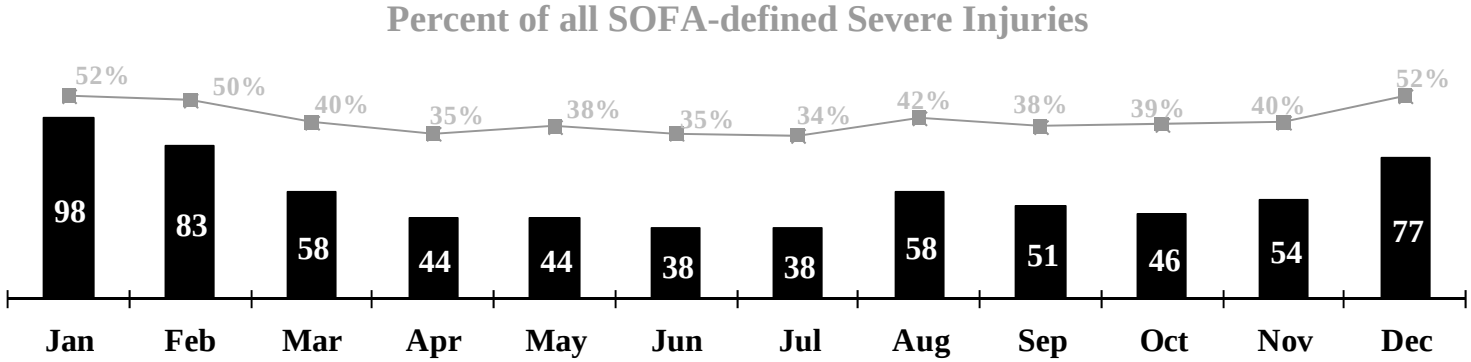
1,636 SOFA-defined Severe Injuries, January 1, 1997 through September 30, 2011



<u>One reason</u> for the winter increase is 'slips, fell, stumbled, etc.' defined by five FRA event circumstance codes:

#51: Slipped, fell, stumbled, etc. due to irregular surface, e.g., depression, slope, etc.
#52: Slipped, fell, stumbled, etc. due to <u>climatic condition (rain, snow, ice, etc</u>.) **<u>[emphasis added]</u>**
#53: Slipped, fell, stumbled, etc. on oil, grease, other slippery substance
#54: Slipped, fell, stumbled, etc. due to object, e.g., ballast, spike, material, etc.
#70: Slipped, fell, stumbled, other

689 of 1,636 SOFA-defined Severe Injuries – 42 percent – resulted from 'slipped, fell, stumbled, etc.' from January 1997 through September 2011. Percentage increases in three winter months (December, January, February)



6 SOFA Safety Discussion Items

Discuss these items anytime switching safety is addressed: safety briefings, meetings…even informal conversations
Seek a forum for these items whenever stakeholders gather to discuss switching safety

Discussion item (mentioned on *page 1*)**: SOFA has issued Five Safety Advisories. These Advisories address causes of recent Switching Fatalities. Mostly these Advisories address slight changes in operating practice to make a task safer, as by isolating risk from an employee. But there is hazard mitigation as well. How can each employee and manager at the ballast level be made aware of this life-saving information?**

Discussion item (mentioned on *page 1*)**: How can this awareness and implementation occur in a working-together, educational, non-punitive manner?**

Discussion item**: Three of the four 2011 Fatalities involved going between rolling equipment. *Lifesaver/Recommendation 1* issued by SOFA in 1999 addressed this procedure. In fact, prior to this, rulebooks and company advisories also addressed this procedure. And still do. Why should a risk so well know continue to harm employees?**

Discussion item**: To date, Fatalities in 2011 involved two types of hazards (temporary close clearance and going between rolling equipment). Future Fatalities – if such occur – may involve other hazards. While reviewing remedies for temporary close clearance and going between rolling equipment is imperative, need exists to be proactive. How can employees and managers be proactive about all hazards that cause harm, or have potential to do so? (see *pages 13-15* for 21 ways employee are harmed)**

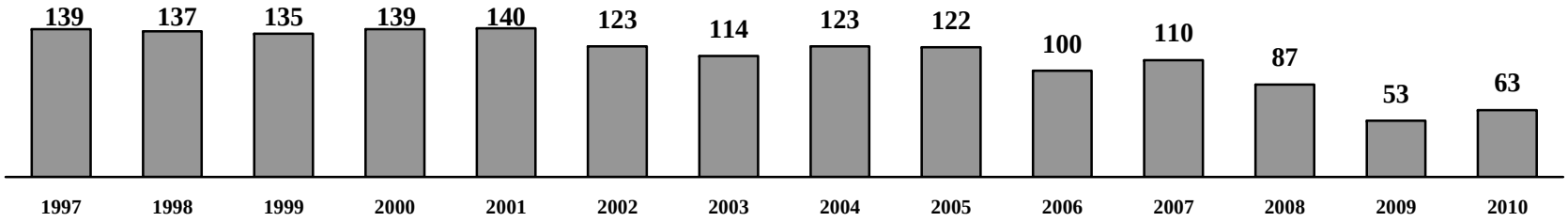
Discussion item**: Switching Fatality risk exists in all months. However, historically December and January have higher risk. As well, SOFA-defined Severe Injuries spike in winter months, most notably from falling. What types of safety efforts could be effective at this time of year?**

Discussion item**: How can a positive safety culture be established on every property? One that reinforces safe operating practice and hazard mitigation. One that passes on safe operating practice among employees and managers.**

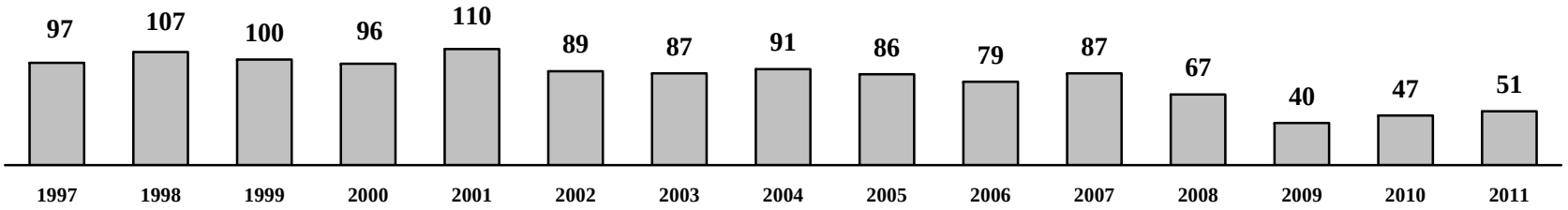
SOFA-defined Severe Injuries… All Harm to Employees has Concern

Definition: Based on its interests, *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.

SOFA-defined Severe Injuries by year, 1997 through 2010
(1997 is the first year these injuries can be defined based on the interests of SWG)



SOFA-defined Severe Injuries by year, 1997 through 2011, first nine months, the latest months available for 2011
(1997 is the first year these injuries can be defined based on the interests of SWG)



SOFA-defined Severe Injuries, by month and year, January 1997 through September 2011

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

All Harm to Employees has Concern

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	total	average
JAN	11	13	16	15	21	12	11	11	20	10	14	13	6	6	8	187	12.5
FEB	17	15	9	9	9	13	17	14	10	6	15	12	4	7	9	166	11.1
MAR	14	12	17	11	10	10	13	10	9	9	11	5	5	4	5	145	9.7
APR	8	10	6	10	12	6	9	13	10	7	8	9	5	7	5	125	8.3
MAY	6	12	8	8	12	14	9	6	6	8	3	7	1	7	8	115	7.7
JUN	9	10	8	11	8	5	10	9	7	11	5	3	6	4	2	108	7.2
JUL	9	14	10	8	10	7	6	10	5	12	8	1	4	4	5	113	7.5
AUG	13	10	11	14	8	10	7	14	10	10	13	5	4	5	5	139	9.3
SEP	10	11	15	10	20	12	5	4	9	6	10	12	5	3	4	136	9.1
first nine months	**97**	**107**	**100**	**96**	**110**	**89**	**87**	**91**	**86**	**79**	**87**	**67**	**40**	**47**	**51**		
OCT	12	12	16	10	5	11	9	7	11	5	11	4	2	4		119	8.5
NOV	12	9	12	11	13	14	10	10	13	8	6	8	3	6		135	9.6
DEC	18	9	7	22	12	9	8	15	12	8	6	8	8	6		148	10.6
totals	**139**	**137**	**135**	**139**	**140**	**123**	**114**	**123**	**122**	**100**	**110**	**87**	**53**	**63**		**1,636**	**113.2**

Amputations (a type of Severe Injury), by month and year, January 1997 through September 2011

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 SOFA-defined Severe Injury counts

All Harm to Employees has Concern

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	total	average
JAN	1	0	2	1	0	0	2	2	2	0	1	1	1	0	2	15	1.0
FEB	0	1	0	1	0	2	1	2	0	2	1	0	0	1	2	13	0.9
MAR	3	4	3	2	1	1	3	1	2	1	0	1	1	0	0	23	1.5
APR	1	2	0	1	2	0	1	1	2	2	3	3	1	0	1	20	1.3
MAY	1	2	3	0	2	2	2	0	0	1	1	0	0	1	2	17	1.1
JUN	2	1	1	0	1	0	0	1	0	0	1	1	0	0	1	9	0.6
JUL	1	5	1	0	4	0	1	2	1	2	2	0	1	1	0	21	1.4
AUG	1	0	1	4	0	1	0	2	2	0	3	0	1	1	0	16	1.1
SEP	2	4	3	2	5	4	0	0	3	1	1	2	0	1	0	28	1.9
first nine months	**12**	**19**	**14**	**11**	**15**	**10**	**10**	**11**	**12**	**9**	**13**	**8**	**5**	**5**	**8**		
OCT	2	5	2	2	0	0	2	2	0	0	2	0	0	1		18	1.3
NOV	2	2	2	2	3	0	1	1	2	3	1	0	0	0		19	1.4
DEC	4	1	0	4	1	1	2	1	1	0	0	0	1	0		16	1.1
totals	**20**	**27**	**18**	**19**	**19**	**11**	**15**	**15**	**15**	**12**	**16**	**8**	**6**	**6**		**215**	**14.8**

Switching Fatalities, SOFA-defined Severe Injuries, and Other Reportable Events, 1992 through 2010, full year; 2011, first nine months

S*ource*: Switching Fatalities from *SOFA Database*; all other series from FRA, accessed September 03, 2011
***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 Severe Injuries)	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	*	*	6,648	2,359	864	4,910	1,049
1993	15	*	*	5,649	2,611	865	4,892	1,032
1994	12	*	*	5,026	2,504	911	4,979	981
1995	11	*	*	4,215	2,459	944	4,633	955
1996	7	*	*	3,726	2,443	783	4,257	945
1997	11	139	20	3,489	2,397	855	3,865	**1,049
1998	8	137	27	3,642	2,575	971	3,508	**1,049
1999	9	135	18	3,835	2,768	1,031	3,489	924
2000	13	139	19	3,893	2,983	1,147	3,502	877
2001	8	140	19	3,561	3,023	1,035	3,237	915
2002	6	123	11	3,022	2,738	1,050	3,077	935
2003	10	114	15	2,936	3,019	1,230	2,977	896
2004	11	123	15	2,910	3,385	1,353	3,085	**878
2005	11	122	15	2,818	3,266	1,270	3,066	**878
2006	7	100	12	2,484	2,999	1,067	2,942	992
2007	6	110	16	2,519	2,694	1,046	2,778	877
2008	12	87	8	2,215	2,478	909	2,430	890
2009	8	53	6	1,963	1,905	654	1,929	760
2010	8	63	6	1,863	1,893	641	2,015	822
2010, Jan-Sep	7	47	5	1,380	1,458	496	1,480	615
2011, Jan-Sep	4	51	8	1,318	1,462	525	1,431	588

***SOFA-defined Severe Injuries are defined only back to 1997** ****Counts happened to be identical for these successive years**

21 Ways Employees are Harmed

Fatalities – and some SOFA-defined Severe Injuries – can result from these hazards

Over its existence, SOFA has used 'Advisories', 'Lifesavers/Recommendations', and 'Special Switching Hazards' to name and describe hazards that cause harm to employees. More important than the name is the hazard addressed. The following is a list of those hazards. Often these hazards interact. That is, a Fatality can involve more than one hazard. More information about these hazards can be found in SOFA reports. This list is not exhaustive of all hazards. Other hazards exist, as those involving local conditions. Use this knowledge to educate about switching Fatalities…see SOFA Education Section on *pages 16-20*

ADVISORIES

1) **Inexperience: Not just years of service, but familiarity with a territory (e.g., industrial site). Pass your experience on with a nurturing approach to less experienced employees. Railroading is a skill that takes time to learn. see *Advisory 1* and *Lifesaver/Recommendation 5*.**

2) **Close/No Clearance: Both permanent and temporary. For permanent, eliminate, or if not possible properly sign. For temporary, often involves a shove move and an object (e.g., equipment, debris) left afoul. see *Advisory 2*.**

3) **Industrial Hazards: There can be many at an industrial site: e.g., close clearances, X-crossings, objects left afoul, trucks, loading devices. Be aware of these hazards before – not after – switching. see *Advisory 3*.**

4) **Job Briefing: Constantly monitor work in progress. If the nature of a task changes, stop the action, huddle, and job brief. Listen to all crewmembers. All must understand what is to happen next. Most Fatalities occur when crewmembers are separated. see *Advisory 4* and *Lifesaver/Recommendation 3*.**

5) **Struck by Mainline Trains: Particular high risk in winter and darkness. But harm has resulted in good lighting and non-winter. Exit the cab after job briefing. Exit on the field side if possible. see *Advisory 5*.**

LIFESAVERS/RECOMMENDATIONS

6) **Going between Rolling Equipment: A concern because of recent Fatalities. Notify all crewmembers of the intent to foul. Let the slack settle. Tie the equipment down. Separate train at least 50 feet if adjusting knuckles/drawbars, or applying or removing an EOT device. see *Lifesaver/Recommendation 1*.**

7) **Struck by Equipment Other than Own in Yard or Industry: When two or more crews are working in close proximity (e.g. yard, industrial site), extra precautions must be taken. Establish communication with other crew (s), and yardmaster when applicable, if your equipment has potential to interact with other crews. see *Lifesaver/Recommendation 2*.**

8) **Move Controlled by Combination of Hand or Radio Signals, or Specific Distances not Given: Give engineer a specific distance to move ('distance to go') when beginning a shove move. Do not use a combination of hand and radio signals. see *Lifesaver/Recommendation 4*.**

21 Ways Employees are Harmed (continued)

Fatalities – and some SOFA-defined Severe Injuries – can result from these hazards

SPECIAL SWITCHING HAZARDS

9) **Derailment: Fatalities have involved derailments caused by a switch, forgetting to remove the derail, collision with a fallen tree, collision with other cars, accumulation of ice and snow on a private crossing, accumulation of ice and snow on a spur track where cars were being spotted, cars left afoul, and compacted aggregate used as a temporary crossing at an industrial site. Shoving is associated with these Fatalities.**

10) **Drugs: In a few of the 179 Fatalities reviewed, a crewmember tested positive for drugs. This is not to suggest that drugs have been a major risk factor in switching Fatalities.**

11) **Electronic Device Use: In a few of the 179 Fatalities reviewed, a crewmember was texting or using a cellphone. This is not to suggest that texting or cellphone use have been a major risk factor in switching Fatalities.**

12) **Tripping, Slipping, or Falling: Fatalities have involved falling while on a car, getting on or off a car, adjusting a hand brake, being jostled from a car by unusual car movement, and the breaking of a faulty attached vertical handbrake support.**

13) **Environmental Condition: A Fatality involved dense fog and darkness when cars left afoul were struck. Ice and snow build up that can cause a derailment is an environmental risk.**

14) **Equipment Defect: Fatalities have involved the absence of a 'BR' end handhold, an obstructed stairwell welded with a metal rod that prevented escape, an undersized brake platform, and a missing knuckle.**

15) **Failure to Confirm Route of Movement: Fatalities have involved throwing the wrong switch and turning away from the direction of movement, lining a switch when movement resulted from an unidentified radio signal, cars sent down one track when a crewmember expected cars being sent on another track, storing a locomotive after work was completed, and fouling live track while movement went on wrong track.**

16) **Free-Rolling Railcars: Fatalities have involved excessive speed when dropping cars thus not allowing a crewmember to safely dismount, a car being staked with a board that caused the car to move unexpectedly, a car being kicked hitting a locomotive on an adjacent track, not setting an adequate number of brakes when cars contained more weight than originally thought, dropping cars on a member of another crew who was setting an E.O.T. device, fouling adjacent track being used by another crew while his crew was hauling cars over the yard hump, kicking one last car before taking a break, and cars fouling a clearance point.**

21 Ways Employees are Harmed (continued)

Fatalities – and some SOFA-defined Severe Injuries – can result from these hazards

SPECIAL SWITCHING HAZARDS

17) **Struck by Motor Vehicle: Fatalities have involved being struck by a tractor-trailer while shoving on a mainline (deceased was in a caboose), being knocked off the leading car of a shove move after being struck by a van (X-crossing warning devices were in working order), being struck by an eighteen-wheel truck at an industrial site while riding a shove move, a semi-tractor striking a car being ridden in spotting cars at an industrial site, a RCL operation shoving cars across a crossing protected by an active warning system (conductor was riding shove move which was struck by truck cab), and riding the leading end of a bulkhead flatcar over a crossing protected by crossbucks, and being struck tractor-trailer traveling at 18 mph.**

18) **Struck by Loading Device: Fatalities have involved being struck by a piggy-packer.**

19) **Unexpected Movement of Railcars: Fatalities have involved cars being worked on being struck by free-rolling cars, releasing a low hand brake upon which cars immediately moved, moving cars without knowledge of a crewmember, a change in operating procedures while swapping equipment between crews, change in switch line-up without effective communication among crew, arbitrary change in switching operations, not reversing a siding switch as intended, walking in the gauge with back to movement during a shove movement on the mainline, lining the wrong switch whiling shoving into a yard, a RCL operator working alone and being struck by locomotive being controlled, and connecting an air hose when a 16-car cut moved unexpectedly.**

20) **Unsecured Cars: Fatalities have involved falling from a car while attempting to set brakes to stop a free-rolling cut, a free-rolling car striking a car being ridden, being crushed while walking in front of an unsecured car, being crushed by rolling cars when going between equipment to straighten a drawbar, setting a car out of way of the movement only to have that car roll into the movement, and not setting brakes on cars in proximity of switching movements.**

21) **Miscellaneous: Fatalities have involved falling off a moving locomotive, falling into an unloading pit, being thrown from a shove move by slack action, being distracted while walking in front of a lite locomotive, a side collision, and a collision resulting from a misaligned switch. Never ignore a potential hazard.**

Use this knowledge to educate about switching Fatalities…see SOFA Education Section on *pages 16-20*

SOFA Education Section

We learn best when we learn together

Purpose

SOFA places emphasis on education about the reasons and remedies for switching Fatalities. This section presents selective Fatality cases – captured in short narratives – that emphasize particular reasons and remedies. Studying past cases may prevent future cases.

Learn reasons and remedies interactively

SOFA only suggests a teaching and learning approach in reviewing these cases. Individuals – employees, managers, and training instructors – may devise better approaches.

1. **21 Ways Employees are Harmed:** Gain some background. Read about these ways (*pages 13-15*). You may want to read more about these hazards in SOFA reports and a recent briefing.

2. **Recreate Event:** After reading a short case narrative, recreate the switching environment before the task began. Describe how the environment may have changed as the switching task progressed. Describe how the final event occurred. Usually, it is an impact with moving equipment or a motorized vehicle. (Note: the narrative may not contain all the needed information. You may want to make some assumptions.)

3. **Relate Event to Your Experience:** Relate your recreation to situations you and your crew have encountered.

4. **Your Reasons and Remedie**s: Now think of what you believe was involved, and how you and your crew might have prevented this event.

Recognition and respect

Intent is that case-based education will prove preventive. In reviewing, please be mindful that these employees lost their lives in railroad service, and that their families will forever bear the burden.

Information sources

The Switching Fatality narrative summaries were taken from the *SOFA Database*, which contains specifics about each case as developed by SWG in its review of on-duty fatality investigations (These investigations are required by *49 U.S.C. Section 20903*). The *2011 SOFA Report* contains information about Advisories, Lifesavers/Recommendations, and Special Switching Hazards. This and previous SOFA reports are available at: Available at SOFA website (navigate at this site using the 'In this Section' tab in upper left corner): http://www.fra.dot.gov/Pages/1781.shtml

ADVISORIES

Inexperience **see *Advisory 1* and *Lifesaver/Recommendation 5***
A conductor with one year of service was riding in the stairwell of the leading locomotive. He was directing the move by radio when he realized too late that the move would not clear the standing equipment. He was crushed between the handrail of his locomotive and the standing locomotive.

Close/No Clearance **see *Advisory 2***
A two person crew was switching cars in a yard and, without the trainman's knowledge, another switching crew had set cars into a track adjacent to the one being used by the first crew. The set out included a wide ladle car and it created a clearance issue on the adjacent track. Some time later, the trainman was riding the lead car down the track adjacent to the wide ladle car and was killed when he was rolled between the car he was riding and the wide ladle car sitting on the adjacent track.

Industrial Hazards **see *Advisory 3***
A three-person crew was called to switch an industry that all were very familiar with. During the switching moves, the brakeman was inside an area with no clearances between the cars and the hand railings installed on the walls. He was making coupling and, according to the conductor and engineer, upon completion of that work, ordered the engineer to haul out of the building where the conductor would take over the next move to be performed. Subsequently, a plant employee observed the brakeman slumped beside the track, rushed to assistance, call 911 and notified the conductor that his man was down. The brakeman died later on at the hospital of crushing wounds incurred when he was rolled between the cars being pulled out and the railing.

Job Briefing **see *Advisory 4* and *Lifesaver/Recommendation 3***
An eastbound train was stopped on the siding waiting for the passage of two westbound trains. The first train, approaching at a speed of 20 -23 mph, was observed by the engineer and heard the train sounding its whistle and bell. The conductor on the standing train got up and without a word, departed the locomotive's cab to conduct a roll-by inspection and stepped off the standing train locomotive on the live side between tracks. The approaching train struck the conductor, killing the conductor.

Struck by Mainline Trains **see *Advisory 5***
An eastbound train was stopped on the siding waiting for the passage of two westbound trains. The first train, approaching at a speed of 20 -23 mph, was observed by the engineer and heard the train sounding its whistle and bell. The conductor on the standing train got up and without a word, departed the locomotive's cab to conduct a roll-by inspection and stepped off the standing train locomotive on the live side between tracks. The approaching train struck the conductor, killing the conductor.

LIFESAVERS/RECOMMENDATIONS

Going between Rolling Equipment **see *Lifesaver/Recommendation 1***
A three person switching crew was shoving a cut of cars down a track with the intent of coupling to another cut that was sitting in the track. It was hard to shove the cars and the conductor told the brakeman to look for closed angle cocks. The brakeman found a closed angle cock when the shove move was within two car lengths of a coupling, informed the conductor, and opened it. The conductor was crushed and killed between the leading car of the shove and the head car to be coupled to when the shove move unintentionally accelerated just prior to coupling.

Struck by Equipment Other than Own in Yard or Industry **see *Lifesaver/Recommendation 2***
Two yard jobs working on adjacent tracks. The conductor of one is studying his switch list as the other job is shoving into the adjacent track. Conductor is struck and killed by the lead car of the adjacent track shove move.

Move Controlled by Combination of Hand or Radio Signals, or Specific Distances not Given
see *Lifesaver/Recommendation 4*
While shoving lite engines back to train on mainline, employees failed to control the movement by radio, resulting in a collision with a standing train.

SPECIAL SWITCHING HAZARDS

Derailment
A three person local switching crew was shoving a loaded covered hopper down an industrial lead. The conductor was riding on one side of the car and the brakeman was riding the other. As the car was shoved over a private crossing, the accumulation of ice and snow lifted the car off the rails and it tipped over and onto the conductor who was killed as a result of the derailment.

Drugs
A three-person crew was in the process of switching a plant when the conductor sent the locomotive and cars out of one track toward the brakeman who was to handle the switches and direct the cars into another track. The conductor stopped the move after the cars had cleared an industry road crossing and the engineer waited to receive instructions from the brakeman. However, the brakeman had mounted the second head car behind the locomotives and had apparently slipped or fell from that position and was found dead by the engineer and conductor lying between and beneath the fourth head car. The brakeman tested positive for THCA & THC.

Electronic Device Use
A three person train crew was performing switching operations at an industrial location. The brakeman controlling movements by radio, instructed the engineer to back up four cars to a coupling. The engineer, watching in the side mirror of the locomotive, noticed the cars moving down curved track instead of the straight track to the coupling. The switch target as seen in the mirror indicated the switch was lined for the spur track, not the straight track. The engineer saw someone walk in front of the movement and it was determined later to be the brakeman, who was struck and killed by the erroneous movement. Cellular telephone records indicated the brakeman had made or received several telephone calls, including a two-minute call during the time of the fatal shove over the misaligned switch.

Tripping, Slipping, or Falling
A three-person road crew arrived at a siding, pulled into the siding and stopped their train. They then cut off their locomotive consist, ran around the 50 loaded cars in their train, and tied onto the opposite end. The conductor and brakeman then positioned themselves on the leading end of the shove move and directed the engineer by radio to begin the shove into the plant. As the move entered a descending grade into the plant, the slack ran out, the conductor lost his hold on the leading car, fell in front of the car he was riding, was run over and died.

Work Safely in Winter Months…and all career long from hiring-on to retirement

Environmental Condition

A three-person crew (engineer, conductor, and student conductor) arrived at an industrial spot where they were required to spot 2 loads. This industry had not been spotted for about a month and three inches of accumulated snow was covering packed ice on the spur track. The conductor rode the leading end of the first car adjacent to the standing train on the main track and the student conductor rode the opposite side of the same car, controlling the movement by radio. Due to the build-up of packed ice and mud in the flange-way the car derailed into the side of cars left standing on the main track, and the conductor was crushed between the cars.

Equipment Defect

A three-person road switcher was in the process of dropping a car into a track. However, the locomotive was fouling the track the car was to enter. The brakeman, realizing this, jumped from the trailing end of the car and ran to the leading end to try and stop the car. The conductor, who was standing near the fouling corner of the locomotive, started up the stairwell of the locomotive when he realized what was happening. However, the stairwell was obstructed with a metal rod that had been welded into place and prevented the conductor an escape route. He was subsequently crushed between the striking car and the metal rod.

Failure to Confirm Route of Movement

A three person crew switching in the yard was building commuter trains. During a shove movement the brakeman aligned a power operated switch for a shoving movement, gave instructions to the engineer to make the shove, failed to confirm the route of movement, fouled the live track, and was struck by the movement. The engineer observed the movement was going down the wrong track but did not stop the movement until it struck equipment on the track. The engineer looked forward following the impact and saw the brakeman lying between the gauge of the rail.

Free-Rolling Railcars

Two crews working in the same yard from opposite ends, one crew dropped ten free rolling cars in on top of the cut where the other crew's foreman was installing the E.O.T. at the opposite end. Cars impacted with sufficient force to knock down and run over the foreman.

Struck by Motor Vehicle

Three person crew was spotting cars at industry, when a highway-user (semi-tractor) backed out of an unloading location. After completing the backing movement the highway-user pulled forward into side of train movement, striking and killing brakeman who was riding the side of equipment.

Struck by Loading Device

A three person switching crew was working in a piggy-back facility and had just finished shoving a cut of cars down a track to be worked by the piggy-packers (equipment used to load and unload TOFC/COFC rail shipments). The conductor was returning to the locomotive when he was struck and killed by one of the piggy-packers.

Unexpected Movement of Railcars

A three person local switching crew had cut away from their train on the main track and proceeded to pull by the switch providing access to a clear track. The brakeman was at the switch and the conductor had removed the derail from the clear track and was awaiting the shove move at the point where the cut would be made. Meanwhile, the brakeman, who was to have gotten the switch from the main to the clear track, was walking between the gauge of the mainline track toward the remaining portion of his train. The conductor saw the cars being shoved toward the remaining portion of his train and shouted to the brakeman and then to the engineer to stop. The brakeman with his back to the move was hit and run over by the leading car of the shove.

Unsecured Cars

A two-person crew was switching at a siding in single-track territory. The conductor left a portion of his train on the mainline and went into the siding with a cut of cars. While in on the siding, the cars left on the mainline and, as post accident investigation revealed, had been left with the air "bottled", rolled away. The crew chased the runaway cars with the conductor riding the leading end of the lead car and the engineer, 23 cars away, shoving as directed by radio commands from the conductor. The shove move struck the runaway cars and the conductor was crushed to death as a result of the collision.

Miscellaneous

An engineer, having just gone off duty, was distracted and subsequently struck and killed by a lite engine move being operated by a hostler. The hostler was operating the locomotive consist from the trailing end at the time and did not have anyone on the leading end when the engineer was struck.

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