

SOFA Switching Fatality and Severe Injury Update – 2015 First Quarter

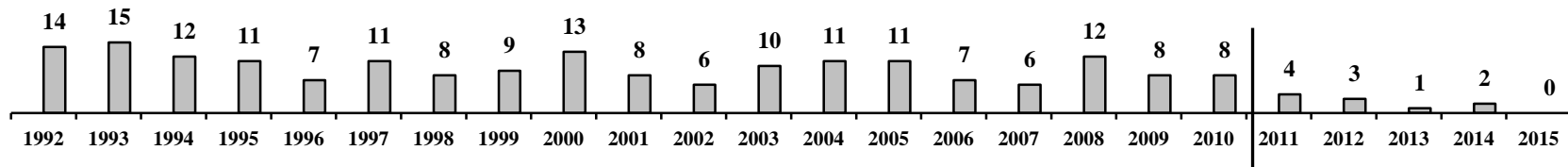
PLEASE POST IMMEDIATELY

- No fatalities in 2015 through March 09...SOFA's mission is Zero Switching Fatalities
- Last switching fatality on October 8, 2014...152 days switching-fatality free through March 09, 2015

October 8, 2014 – BNSF – Colorado Springs, CO: A BNSF conductor was pinned between equipment while switching on industrial track. She was 42-years old with 3 years of service. [based on preliminary information]

- Lower switching fatality counts since 2011

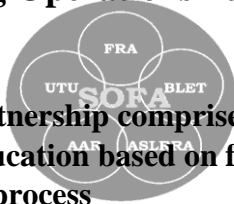
197 Fatalities, by year: 1992 through 2014, full year; 2015, part year through March 09



- Two switching hazards to review: Close/No Clearance and Going between Rolling Equipment

Since 2010, 11 of the 18 switching fatalities (61 percent) have involved these two hazards, as partially based on preliminary information. See examples on next two pages, and remedies on the page thereafter

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
- Find SOFA reports and information at: <http://www.fra.dot.gov/SOFA> [accessed March 09, 2015]

Recent Cases Involving Close/No Clearance

October 8, 2014 – Colorado Springs, CO

[This case is based on preliminary information and is subject to change upon SOFA review. All other cases in this display are based on SOFA review]

A BNSF conductor was pinned between equipment while switching on industrial track. She was 42-years old with 3 years of service.

May 28, 2012 – Kenmare, ND

The conductor was riding the leading end of a shoving move and struck rail equipment left out to foul on an adjacent track, fatally injuring the conductor.

January 30, 2012 – Gary, IN

The foreman was riding the leading end of a shoving move and struck rail equipment on an adjacent track, crushing the foreman.

February 08, 2011 – 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.

September 02, 2010 – Bridgeport, NJ

A 53-year old conductor was caught and crushed between the rail car he was riding and a standing rail car that was left fouling his movement on an adjacent track.

May 31, 2010 – Kearny, NJ

Employee cut out the trucks on locomotive NJTR 4206 and failed to ensure any brakes were applied to the locomotive.

Recent Cases Involving Going between Rolling Equipment

July 31, 2012 – Mason City, IA

After kicking cars into a track, a switchman was crushed between the equipment he was working on and free-rolling equipment previously kicked into the track.

September 08, 2011 – 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.

August 15, 2011 – 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.

July 25, 2011 – 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 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.

July 13, 2010 – East Deerfield, MA

A 34-year old Pan Am yard conductor was crushed between the couplers of two cars while aligning miss-aligned drawbars and/or opening couplers during a switching operations.

Close/No Clearance and Going between Rolling Equipment

6 of the last 18 fatalities involved Close/No Clearance (a SOFA Advisory) – section 3.5.6 of 2011 SOFA Report

Find at: <http://www.fra.dot.gov/SOFA> [accessed March 09, 2015]

- 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).

5 of the last 18 fatalities involved Going between Rolling Equipment (a SOFA Recommendation/Lifesaver, and also the subject of Federal Railroad Administration's *Safety Advisory 2011-02 and 2013-03*)

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.

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.

DATA SECTION – 2015 First Quarter Update

18 Recent Switching Fatalities, January 01, 2010 through March 09, 2015

- These 18 fatality cases occurred since the 179 cases (January 1992 through December 2009) which formed the basis of the *2011 SOFA Report*
- The purpose in displaying is to identify any potential emerging issues concerning risk in switching operations. Please note the two cases marked ‘preliminary’ have not yet been reviewed by SOFA. Thus, event reasons may change upon review

Year	Count	Date	City	State	Reviewed or Preliminary	<u>Fatality Reasons: brief description</u>
						Risks other than those listed are often involved. Cases marked ‘preliminary’ are subject to revision of event reasons.
2010	1	04/23/10	Riverdale	IL	reviewed	Lack or Inadequate Job Safety Briefing
	2	05/31/10	Kearny	NJ	reviewed	Close/ No Clearance
	3	06/10/10	Doswell	VA	reviewed	Struck by Mainline Train; and Drugs and Alcohol
	4	07/01/10	Meridian	MS	reviewed	Employee Tripping, Slipping, or Falling
	5	07/13/10	East Deerfield	MA	reviewed	Going between Rolling Equipment
	6	09/02/10	Bridgeport	NJ	reviewed	Close/ No Clearance
	7	09/04/10	Mobile	AL	reviewed	Industrial Hazard; and Miscellaneous Causes
	8	10/11/10	Orange	TX	reviewed	Inexperience; and Employee Tripping Slipping, or Falling
2011	9	02/08/11	Kankakee	IL	reviewed	Close/ No Clearance (cars left afoul)
	10	07/25/11	Bedford Park	IL	reviewed	Going between Rolling Equipment; and Unsecured Cars
	11	08/15/11	Kansas City	KS	reviewed	Going between Rolling Equipment; and Miscellaneous Causes
	12	09/08/11	Botkins	OH	reviewed	Going between Rolling Equipment; and Unexpected Movement of Railcars
2012	13	01/30/12	Gary	IN	reviewed	Close/ No Clearance (cars left afoul); and Environment; and Industrial Hazard
	14	05/28/12	Kenmare	ND	reviewed	Close/ No Clearance (cars left afoul); and Inexperience; and Failure to Confirm Route of Movement
	15	07/31/12	Mason City	IA	reviewed	Going between Rolling Equipment; and Lack or Inadequate Job Safety Briefing; and Unexpected Movement of Railcars; and Unsecured Cars
2013	16	02/16/13	Cleveland	OH	reviewed	Inexperience; and Drugs and Alcohol; and Employee Tripping, Slipping, or Falling
2014	17	06/24/14	Birmingham	AL	preliminary	Derailment
	18	10/08/14	Colorado Springs	CO	preliminary	Close/ No Clearance (cars left afoul)
2015	--	--	--	--	--	No switching fatalities through March 09

Reasons for Switching Fatalities...reasons have remedies

SOFA has reviewed 195 switching fatalities (1992 through 2013). Currently, two more cases remain to be reviewed. Each case is assigned one or more general reasons pertaining to its occurrence. Altogether, the 195 cases have 348 reasons assigned. There are 19 general reasons for switching fatalities identified by SOFA, plus a miscellaneous category. More specific reasons (not shown below) are also assigned to cases as Possible Contributing Factors (PCFs). Reasons have remedies...switching fatalities need not occur!

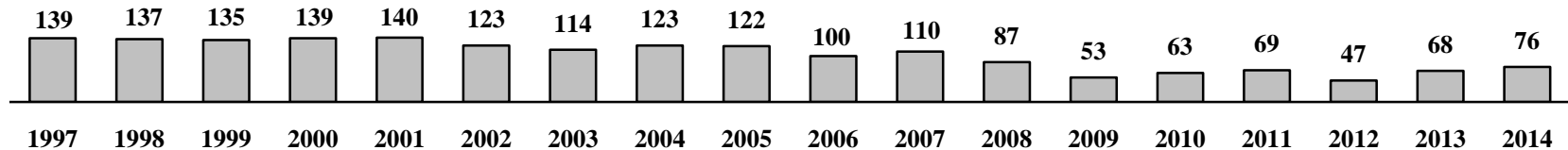
Twenty Reasons	SOFA Reasons/Type	Number of Cases	Percent of All Reasons
1	Inexperience (1.5 or less years of service)	35	10.1%
2	Close/No Clearance (both temporary and permanent)	34	9.8%
3	Industrial Hazard	28	8.0%
4	Going between Rolling Equipment (as to adjust knuckles, drawbars, etc.)	26	7.5%
5	Lack of, or inadequate, job safety briefing (particularly when the nature of work changes)	25	7.2%
6	Employee Tripping, Slipping, or Falling (unusually from equipment)	21	6.0%
7	Struck by Mainline Trains (when working along mainlines or doing a roll by inspection)	21	6.0%
8	Communicate Before Action is Taken	20	5.7%
9	Derailment	17	4.9%
10	Unsecured Cars	17	4.9%
11	Miscellaneous Causes	16	4.6%
12	Free-Rolling Railcars	14	4.0%
13	Unexpected Movement of Railcars	14	4.0%
14	Protect Employees Against Moving Equipment	13	3.7%
15	Equipment Defect	11	3.2%
16	Struck by Motor Vehicle (often at a crossing)	9	2.6%
17	Environmental Conditions	8	2.3%
18	Failure to Confirm Route of Movement	8	2.3%
19	Drugs and Alcohol	7	2.0%
20	Electronic Devices	4	1.1%
		total	348 100%

SOFA-defined Severe Injury Update

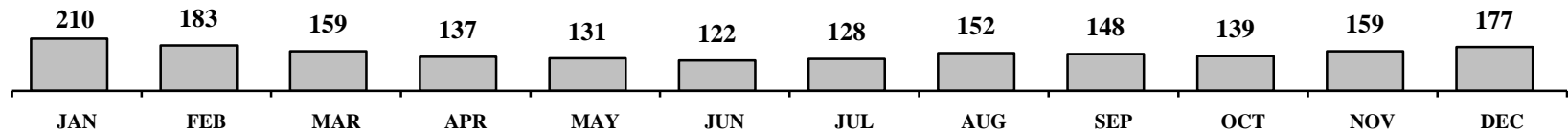
Definition: Based on its interests (i.e., potentially involving the same factors as fatalities), *Severe Injuries* are defined by the SOFA Working Group as (1) potentially life threatening; (2) having a high likelihood of permanent loss of function, permanent occupational limitation, or other permanent 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.

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.

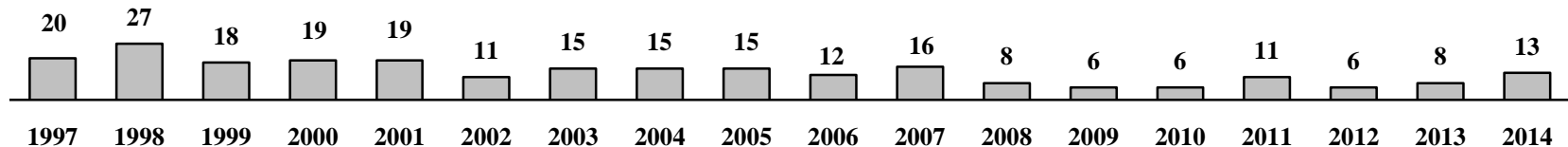
1,845 SOFA-defined Severe Injuries, by year: January 1997 through December 2014



1,845 SOFA-defined Severe Injuries, by month, January 1997 through December 2014



245 Amputations (counts are included in Severe Injuries), by year: January 1997 through December 2014



1,845 SOFA-defined Severe Injuries, by month and year, January 1997 through December 2014

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. Publically available FRA data used in this table were accessed on February 28, 2015

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	totals	average
JAN	11	13	16	15	21	12	11	11	20	10	14	13	6	6	8	9	8	6	210	11.7
FEB	17	15	9	9	9	13	17	14	10	6	15	12	4	7	9	2	5	10	183	10.2
MAR	14	12	17	11	10	10	13	10	9	9	11	5	5	4	5	6	3	5	159	8.8
APR	8	10	6	10	12	6	9	13	10	7	8	9	5	7	5	2	4	6	137	7.6
MAY	6	12	8	8	12	14	9	6	6	8	3	7	1	7	8	4	5	7	131	7.3
JUN	9	10	8	11	8	5	10	9	7	11	5	3	6	4	2	6	2	6	122	6.8
JUL	9	14	10	8	10	7	6	10	5	12	8	1	4	4	5	3	7	5	128	7.1
AUG	13	10	11	14	8	10	7	14	10	10	13	5	4	5	5	1	5	7	152	8.4
SEP	10	11	15	10	20	12	5	4	9	6	10	12	5	3	4	5	4	3	148	8.2
OCT	12	12	16	10	5	11	9	7	11	5	11	4	2	4	4	1	6	9	139	7.7
NOV	12	9	12	11	13	14	10	10	13	8	6	8	3	6	9	3	5	7	159	8.8
DEC	18	9	7	22	12	9	8	15	12	8	6	8	8	6	5	5	14	5	177	9.8
totals	139	137	135	139	140	123	114	123	122	100	110	87	53	63	69	47	68	76	1,845	102.5

245 Amputations (a type of Severe Injury), by month and year, January 1997 through December 2014

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). Publically available FRA data used in this table were accessed on February 28, 2015

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	totals	average
JAN	1	0	2	1	0	0	2	2	2	0	1	1	1	0	2	0	0	0	15	0.8
FEB	0	1	0	1	0	2	1	2	0	2	1	0	0	1	2	0	1	1	15	0.8
MAR	3	4	3	2	1	1	3	1	2	1	0	1	1	0	0	1	0	1	25	1.4
APR	1	2	0	1	2	0	1	1	2	2	3	3	1	0	1	0	0	0	20	1.1
MAY	1	2	3	0	2	2	2	0	0	1	1	0	0	1	2	0	2	2	21	1.2
JUN	2	1	1	0	1	0	0	1	0	0	1	1	0	0	1	0	0	1	10	0.6
JUL	1	5	1	0	4	0	1	2	1	2	2	0	1	1	0	0	1	2	24	1.3
AUG	1	0	1	4	0	1	0	2	2	0	3	0	1	1	0	0	1	1	18	1.0
SEP	2	4	3	2	5	4	0	0	3	1	1	2	0	1	0	2	0	1	31	1.7
OCT	2	5	2	2	0	0	2	2	0	0	2	0	0	1	1	1	2	2	24	1.3
NOV	2	2	2	2	3	0	1	1	2	3	1	0	0	0	1	0	0	2	22	1.2
DEC	4	1	0	4	1	1	2	1	1	0	0	0	1	0	1	2	1	0	20	1.1
totals	20	27	18	19	19	11	15	15	15	12	16	8	6	6	11	6	8	13	245	13.6

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

Source: Switching fatalities from *SOFA Database*; all other series from FRA, accessed February 28, 2015

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	2,217	2,481	910	2,429	889
2009	8	53	6	8	2	1,972	1,912	656	1,933	760
2010	8	63	6	12	5	1,882	1,902	650	2,052	830
2011	4	69	11	17	11	1,735	2,022	746	2,061	772
2012	3	47	6	13	4	1,547	1,760	661	1,985	824
2013	1	68	8	13	2	1,760	1,820	689	2,096	863
2014	2	76	13	8	2	1,872	1,713	663	2,280	945
% change	--	--	--	--	--	6.4%	-5.9%	-3.8%	8.8%	9.5%

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

**Counts happened to be identical for these successive years