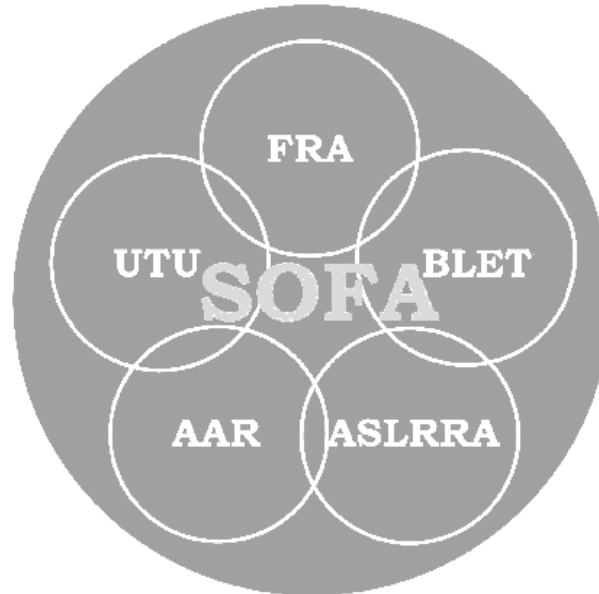


**(Please Post Immediately)**

## **Work Towards Achieving Zero Switching Fatalities**

**On average,  
132.4 Severe Injuries  
occur each year to  
employees engaged in  
switching operations.**

Learn more about  
Severe Injuries.  
Pages 16-29

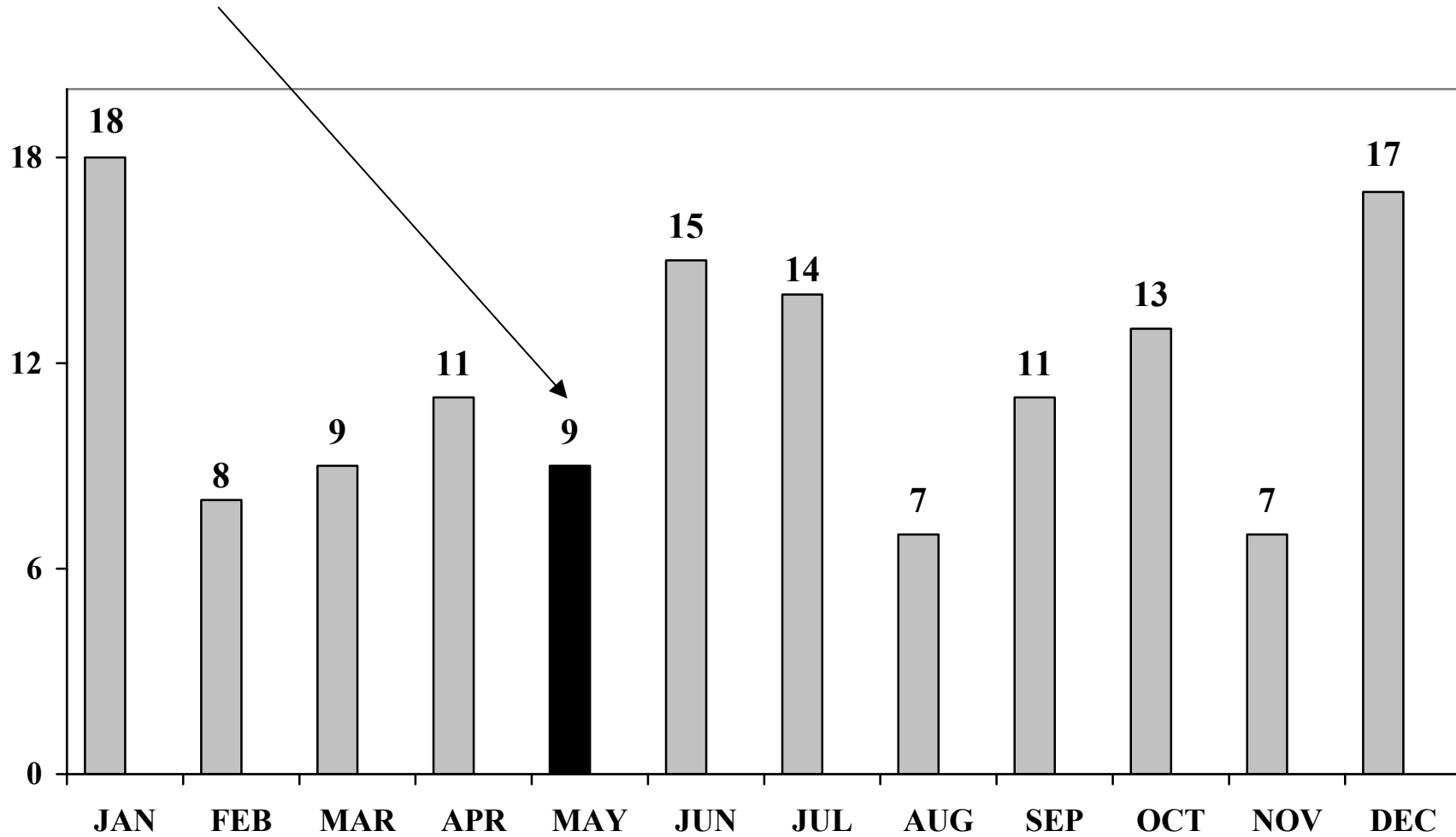


**May 2005 UPDATE**

**9 Switching Fatalities occurred in May since 1992**

# **May 2005 Overview**

**9 of 139 Switching Fatalities since 1992 Occurred in May  
(Current through April 15, 2005)**

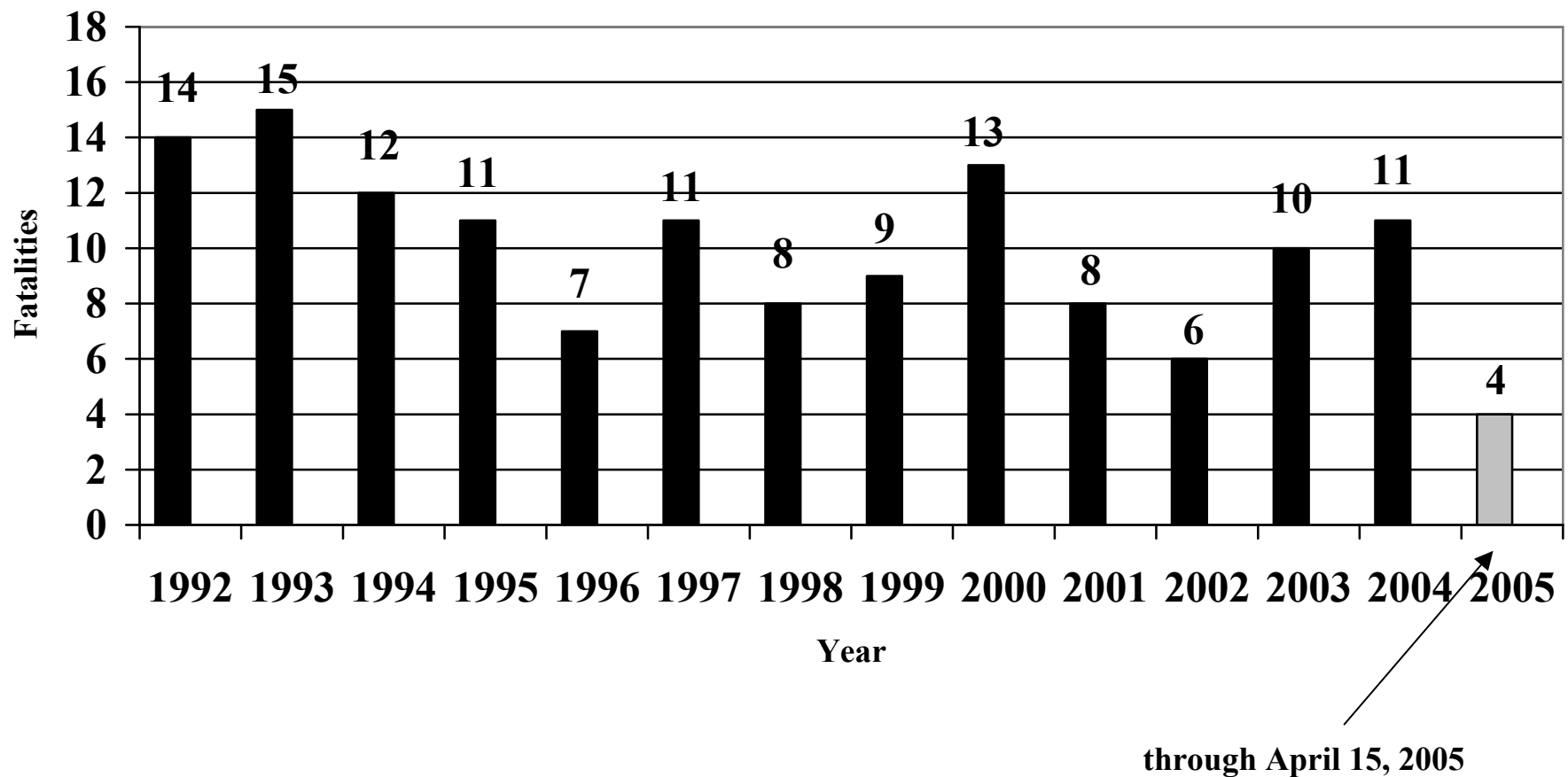


**10.3 switching fatalities occur each year on average**

## 139 Switching Fatalities Since 1992 (through April 15, 2005)

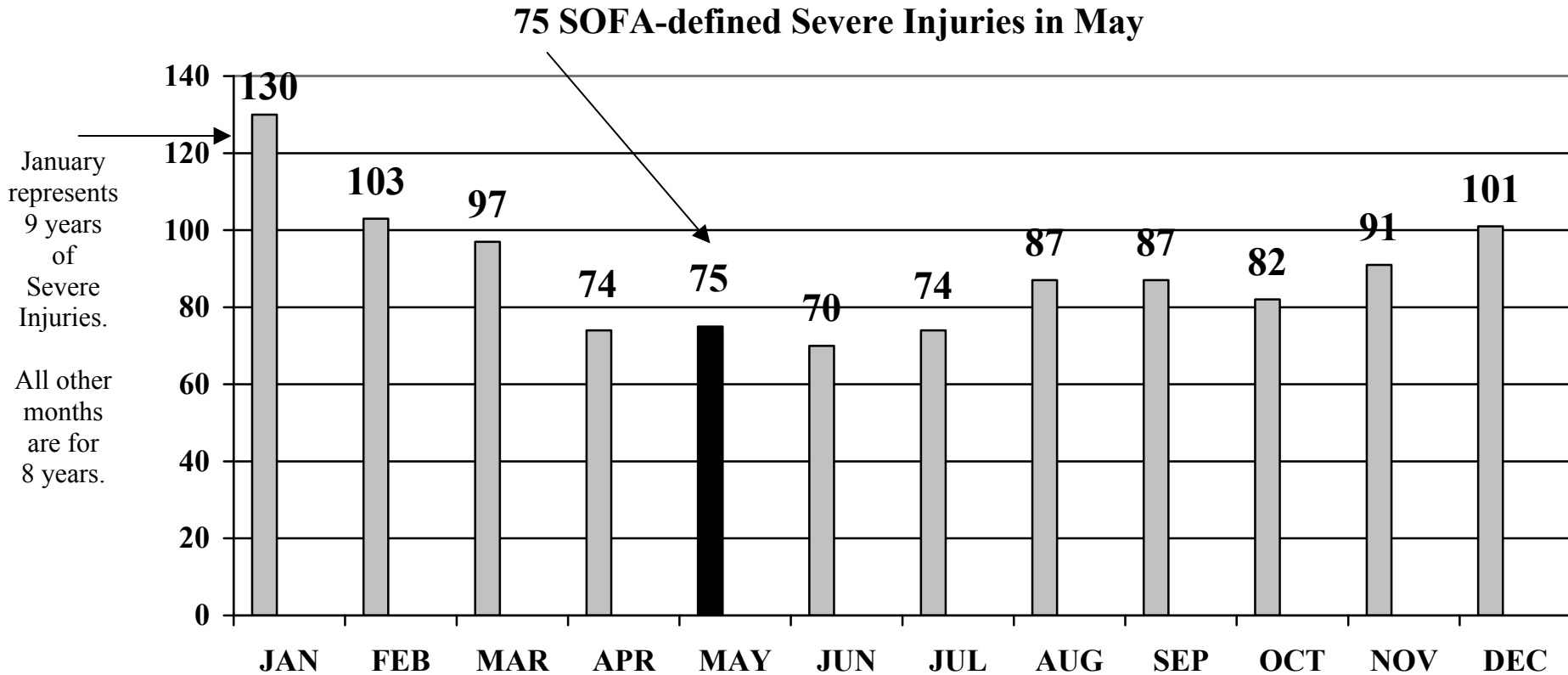
The Switching Operations Fatality Analysis (SOFA) Group reviews each switching fatalities after the Federal Railroad Administration completes its investigation. There have been 139 fatalities since 1992. There were 11 fatalities in 2004. Four fatalities have occurred in 2005 through April 15.

**On average, 10.3 switching fatalities occur each year.**



## 75 SOFA-defined Severe Injuries (including amputations)\* in May (January 1997 to January 2005)

\* *Severe Injuries* were defined by the SOFA Working Group as (1) potentially life threatening; (2) high likelihood of permanent loss of function, permanent occupational limitation, or other permanent disability; (3) likely to result in significant work restrictions; and (4) result 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, See *Severe Injuries to Train and Engine Service Employees: Data Description and Injury Characteristics*. July 2001. This report may be found on the FRA's website.



**1071 Severe Injuries occurred from January 1997 through January 2005\*\***

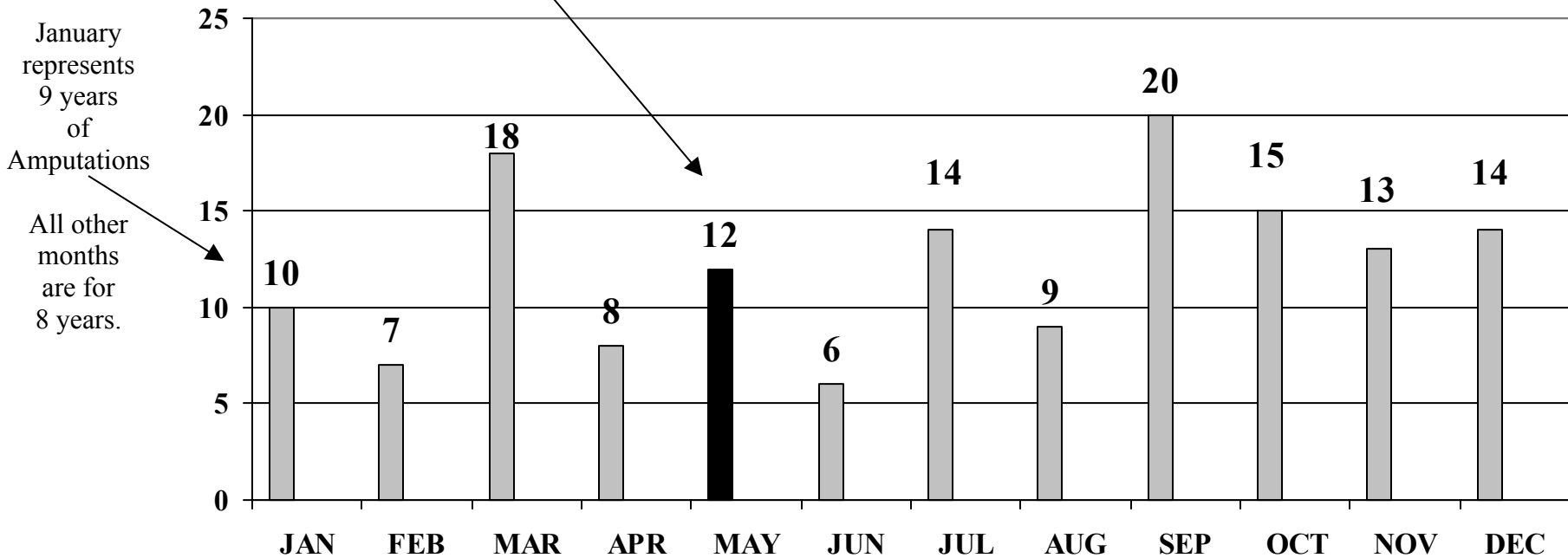
\*\* Latest month available from the Federal Railroad Administration's electronic files

**132.4 Severe Injuries occur each year on average**

## 12 Amputations (a type of Severe Injury) in May (January 1997 to January 2005)

- Amputations are a type of SOFA-defined Severe Injury and are counted in Severe Injuries.
- Amputations are displayed separately because of the extreme nature of trauma to employees engaged in switching operations, and the potential for permanent occupational limitation.

**12 Amputations occurred in May since 1997**



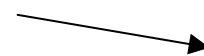
**146 Amputations occurred from January 1997 through January 2005\***

\* Latest month available from the Federal Railroad Administration's electronic files

18.1 Amputations occur each year on average

# 9 May Switching Fatalities, January 1992 through December 2004

Read more about these fatalities and how such events can be prevented in  
*Findings and Recommendations of the SOFA: August 2004 Update Working Group*



#	Date	RR	Location	Age	Service (yrs)	Employee's Job	Employee Act	Employee Location	Fatal Event	SOFA Recommendation	Special Switching Hazard
1	5/22/93	ATSF	El Paso, TX	46	27	yard conductors	standing	alongside on-track equip./on ground	collision with motor vehicle	----	Miscellaneous: Run over by hostler truck
2	5/03/95	CSXT	Evansville, IN	52	32	yard conductors	standing	between track	struck by on-track equip.	<b>Recommendation 2</b>	----
3	5/26/98	BRC	Bedford Park, IL	57	36	yard conductors	adjusting drawbar	on track	sudden/unexpected movement of equip.	<b>Recommendation 1</b>	----
4	5/19/99	NS	Cincinnati, OH	36	1	road conductor	riding	on loco	collision with on-track equip.	<b>Recommendation 5</b>	----
5	5/22/00	CSX	Richmond, VA	38	2	road brakeman	riding	on side of car	struck against object	----	Close Clearance
6	5/31/00	UP	Pine Bluff, AR	47	2	yard conductors	riding	on loco	collision with on-track equip.	----	Miscellaneous: Crushed between standing cars and movement of employee's train
7	5/14/02	UP	Pine Bluff, AR	53	2.5	yard brakeman	adjusting coupler	on track	struck by on-track equip.	<b>Recommendation 1</b>	----
8	5/13/04	MSO	Sturgis, IL	38	--	conductor	--	riding car	slipped and fell from car	<i>Being reviewed by SOFA</i>	
9	5/18/04	NS	Elwood, IN	35	6	brakeman	riding car	on car	collision with motor vehicle	<i>Being reviewed by SOFA</i>	

**The average age of the employees was 44.7 years; average length of service was 13.6 years.**

# Narratives of the 9 May Switching Fatalities

## *SOFA Recommendation and/or Special Switching Hazard*

### **1 – May 22, 1993 – ATSF – El Paso, TX**

**Miscellaneous**

A three-person switching crew was in the process of shoving cars into a track in the TOFC yard. The switch foreman was directing the move when he was struck from behind by the left front fender of a hostler truck and run over by its rear wheels.

### **2 – May 03, 1995 – CSX – Evansville, IN**

**Recommendation 2**

Conductor was struck and killed by a shove move on the track adjacent to where he was working. Communication about the move on that adjacent track had been conveyed to the conductor via the “bleeder,” a utility type employee.

### **3 – May 26, 1998 – BRC – Bedford Park, IL**

**Recommendation 1**

Crew was working in one track in class yard with helper controlling engine moves, conductor was adjusting coupler when three free rolling cars struck him from behind and coupled him up.

### **4 – May 19, 1999 – NS – Cincinnati, OH**

**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 to late that the move would not clear the standing equipment. He was crushed between the handrail of his locomotive and the standing locomotive.

### **5 – May 22, 2000 – CSX – Richmond, VA**

**Close Clearance**

A three-person road switching crew was in the process of spotting loaded coal cars at a unloading facility that was equipped with a “shaker” that helped empty each car. The shaker’s position causes a close clearance condition. The conductor was riding one side of the leading coal car and the brakeman was riding the other. Although having a clear view of the fouling equipment, the brakeman did not get off the car as the conductor had expected and was crushed between it and the fouling shaker equipment.

## **Narratives of 9 May Switching Fatalities (continued)**

### *SOFA Recommendation and/or Special Switching Hazards*

#### **6 – May 31, 2000 – UP – Pine Bluff, AR**

#### **Miscellaneous**

A three-person yard switching crew was in the process of moving their light locomotives through a series of crossover switches however, the switchman had gone to the yard office for another list of cars to switch and the foreman, who had two (2) years of service, was directing the lite engine move by radio. The foreman told the engineer to stop, the foreman got off the leading end of the lead locomotive to line switches, he then told the engineer to continue backing up. Shortly thereafter, the foreman was crushed in a side collision between the locomotive consist he was directing and other cars standing on an adjacent track.

#### **7 – May 14, 2002 – UP – Pine Bluff, AR**

#### **Recommendation 1**

The switchman of a three-person yard switching crew asked the engineer to stretch a track. Noticing that there was a separation between the forth and fifth head cars, the switchman went in to align the couplers. The switchman was coupled up when unsecured cars rolled in on him.

#### **8 – May 13, 2004 – MSO – Sturgis, MI**

#### **Being reviewed by SOFA**

A conductor was killed when he apparently slipped and fell from a car he was riding.

#### **9 – May 18, 2004 – NS – Elwood, IN**

#### **Being reviewed by SOFA**

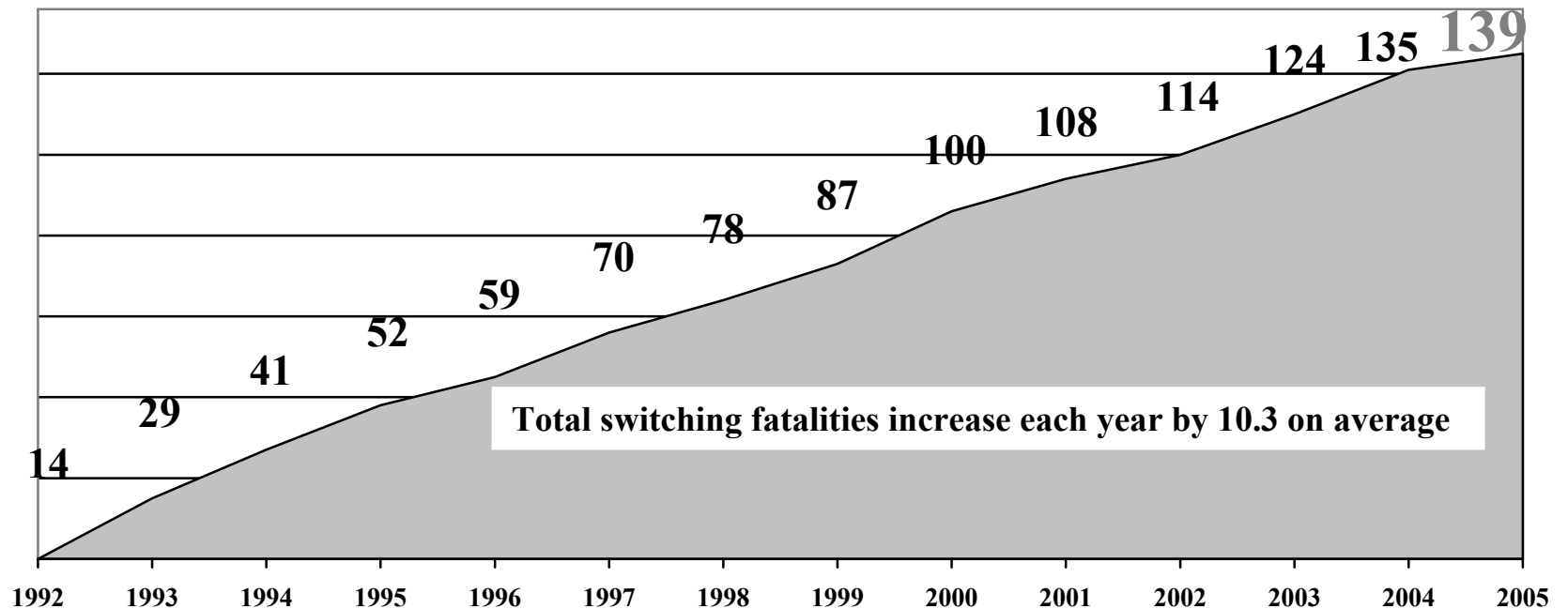
A 35-year old brakeman, with 6-years of service, was killed when the lead car he was riding was struck by a tractor-trailer.

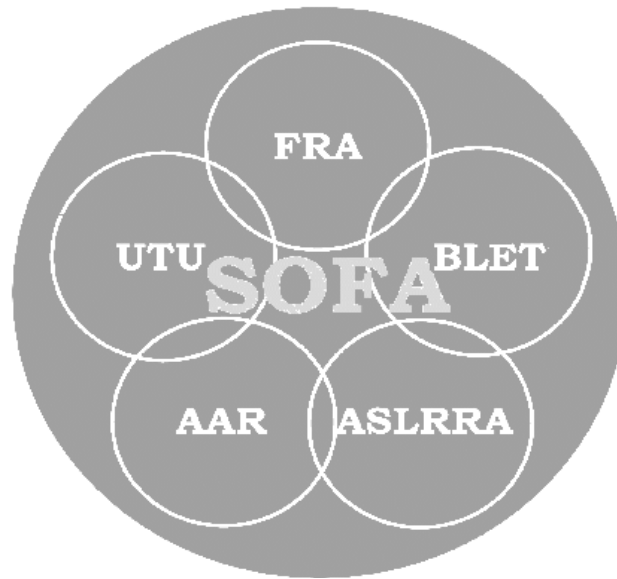
## 4 Switching Fatalities in 2005 through April 15

1. **JAN 10**...Union Pacific (UP) conductor, with 32 years of service, was struck by a mainline train when he stepped out from between the cars of his train in Buena Vista, AR.
2. **JAN 26**...Pacific Harbor Line (PHL) conductor was struck by his train at 5:30 pm while lining a switch at Los Angeles, CA.
3. **APR 06**...Norfolk Southern (NS) train employee was struck by a switcher move while working in the yard at Selma, AL.
4. **APR 11**...Union Pacific (UP) train employee was struck by his train after falling from a car located in the middle of a cut of cars during a shove move he was directing by radio when the cars he was riding struck other standing cars on the same track in Ogden, UT.

**139 Switching Fatalities since 1992 as of April 15, 2005**

**Information on 2005 switching fatalities is preliminary pending formal investigation.**





## **Prevention**

# **May Switching Fatalities Involved SOFA Recommendations**

## **Bedford Park, IL on 5/26/98 and Pine Bluff, AR on 5/14/02**

### **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.

# May Switching Fatalities Involved SOFA Recommendations

## Evansville, IL 5/03/95

### Recommendation 2

When two or more train crews are simultaneously performing work in the same yard or industry tracks, extra precautions must be taken:

#### SAME TRACK

- Two or more crews are prohibited from switching into the same track at the same time, without establishing direct communication with all crew members involved.

#### ADJACENT TRACK

- Protection must be afforded when there is the possibility of movement on adjacent track(s). Each crew will arrange positive protection for (an) adjacent track(s) through positive communication with yardmaster and/or other crew members.

### Lifesaver 2

Protect employees against moving equipment.

### Discussion 2

FE-06-94 and FE-31-94 both involved standing equipment left by another crew. In both cases, it can be argued that there was no possibility of either piece of equipment being moved. However, the fact that both pieces of equipment contributed to the fatalities and in both cases the respective crews had no knowledge that the equipment had been moved into the work area and that the physical layout expected by each fatality had changed contributed to the incident. Compliance with and an understanding of this recommendation would have prevented the other seven fatalities.

# **May Switching Fatalities Involved SOFA Recommendations**

**Cincinnati, OH 5/19/99**

## **Recommendation 5**

Crew members with less than one year of service must have special attention paid to safety awareness, service qualifications, on-the-job training, physical plant familiarity, and overall ability to perform service safely and efficiently. Programs such as peer review, mentoring, and supervisory observation must be utilized to insure employees are able to perform service in a safe manner.

## **Lifesaver 5**

Mentor less experienced employees to perform service safely.

## **Discussion 5**

While classroom training time has increased, in general, the SOFA group has focused on experience and on-the-job training. We have found that limited training and experience continues to factor into many switching operation fatalities. Additional on-the-job training and experience, while working with more experienced peers, may help reduce fatalities among crew members with limited service.



## **SOFA-defined Severe Injuries**

## SOFA-defined Severe Injuries <sup>1</sup>

### Injuries

### Amputations <sup>2</sup>

January 1992 to January 2005

	1997	1998	1999	2000	2001	2002	2003	2004	2005		1997	1998	1999	2000	2001	2002	2003	2004	2005
JAN	11	13	16	15	21	12	11	11	20		1	0	2	1	0	0	2	2	2
FEB	17	15	9	9	9	13	17	14			0	1	0	1	0	2	1	2	
MAR	14	12	17	11	10	10	13	10			3	4	3	2	1	1	3	1	
APR	8	10	6	10	12	6	9	13			1	2	0	1	2	0	1	1	
MAY	6	12	8	8	12	14	9	6			1	2	3	0	2	2	2	0	
JUN	9	10	8	11	8	5	10	9			2	1	1	0	1	0	0	1	
JUL	9	14	10	8	10	7	6	10			1	5	1	0	4	0	1	2	
AUG	13	10	11	14	8	10	7	14			1	0	1	4	0	1	0	2	
SEP	10	11	15	10	20	12	5	4			2	4	3	2	5	4	0	0	
OCT	12	12	16	10	5	11	9	7			2	5	2	2	0	0	2	2	
NOV	12	9	12	11	13	14	10	10			2	2	2	2	3	0	1	1	
DEC <sup>3</sup>	18	9	7	22	12	9	8	16			4	1	0	4	1	1	2	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>124</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>	

**There are 131.4 SOFA-defined Severe Injuries, and 18.0 Amputations each year on average.**

**1** *Severe Injuries* were defined by the SOFA Working Group as (1) potentially life threatening; (2) high likelihood of permanent loss of function, permanent occupational limitation, or other permanent disability; (3) likely to result in significant work restrictions; and (4) result 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, See *Severe Injuries to Train and Engine Service Employees: Data Description and Injury Characteristics*. July 2001. This report may be found on the FRA's website.

**2** Amputations are a type of SOFA-defined Severe Injury and are counted in 'Injuries'. Amputations are broken out separately because of the extreme nature of trauma to employees engaged in switching operations, and the potential for permanent occupational limitation.

**3** January is the latest month of Severe Injuries available from the Federal Railroad Administration's electronic files.

Following material taken from *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. pgs. 57-72

### **Severe Injuries by Selective Attributes and Track Location**

Using the Severe Injury data for the period from January 1, 1997 to December 31, 2003, the frequency of selective attribute variables were calculated based on the track location where the injury occurred. For instance, the frequency of occurrence for the job code related to the injured employee was calculated based on seven track locations: yard, mainline/branch line, industry, siding, highway/roadway, passenger terminal, and other. Other attributes for which the frequency of injuries are calculated by track location: injury type; body location of injury; year; month; day; time of day; activity; age; injury event; equipment location; working location; tools, machinery, appliances, structures, surfaces (etc.); and assigned cause of injury.

### **Statements About Frequency of Serious Injuries by Track Location**

The following observations ...are examples of how the Severe Injury data might be used in trying to understand the injury process. (When there is mention of yard and road crews, the information came from the restricted number of job codes and track locations.)

- The total number of Severe Injuries has remained nearly the same during the years 1997 thru 2001. There was a significant reduction in the number of Severe Injuries in 2002 and a further numerical reduction in 2003.
- There were significant reductions in Serious Injuries in the yard and at industries in 2002 and 2003. Serious Injuries in the yard have declined from 72 in 1997 to 55 in 2003, and from 23 in 1997 to 8 in 2003 at industries.
- Serious Injuries on main/branch line have increased from 28 in 1997 to a high of 39 in 2003.
- Over half (53.9%) the total number of Severe Injuries occurred in the yard during the years 1997 thru 2003.
- Forty-two percent of all Severe Injuries to road train and engine service crews occurred in yards. Road train and engine service crews sustained almost as many Severe Injuries in the yard as yard train and engine service crews. (220 vs. 234 Serious Injuries)
- During the seven-year period, yard train and engine service employees sustained 38.1 percent of the total Severe Injuries, while road train and engine service employees sustained 61.9 percent of the total Severe Injuries. (321 vs. 522 Serious Injuries)
- Yard engineers sustained 12.2 percent of the total number of Severe Injuries to yard crews, while road engineers sustained 26.7 percent of the total number of Severe Injuries to road crews. (39 of 321 vs. 139 of 522)
- Yard train service employees sustained 87.9 percent of the total Severe Injuries to yard crews, while road train service employees sustained 73.3 percent of the total number of Severe Injuries to road crews. (282 of 321 vs. 383 of 522)

- During the seven-year period, road freight engineers incurred 3.6 times as many Severe Injuries as yard engineers.
- There were significantly more Severe Injuries in the yard during the months of January (55), February (48), March (46), and September (46) than during the other months of the year. On the main/branch line, the fewest Serious Injuries occurred during the month of September (13), and the most during the month of November (29).
- There does not appear to be any significant differences in the day of the week when these Severe Injuries occurred in the yard.
- Significantly fewer Serious Injuries occur on main/branch line (18) and at industries (8) on Sunday, than during the other days of the week.
- Significantly more Severe Injuries occurred in the first hour after midnight than during any other time of the day or night. (6.4 percent of the total Serious Injuries).
- At all locations, many more Severe Injuries occurred to older employees, i.e., those over 38 years of age.
- Over 96 percent of the Severe Injuries during the data period were amputations and fractures.
- Severe Injuries are nine times more likely to affect legs and feet than hands and arms.
- There were four times as many amputation Severe Injuries in the yard (83) and at industries (16) than on the main track/branch line (25) for the same seven-year period.
- The proportion of “human factor” Possible Contributing Factor (PCF) Severe Injuries to the total Severe Injuries (41.1 percent) is about the same in the yard (41.5 percent) and on the main track/branch line (42.0 percent). The proportion of (PCF) Serious Injuries is lower, 31.3%, at industries.
- Over one half of the Severe Injuries in each identified location were impacted by “the ground, ballast, or floor” as the identified “tools, machinery, appliances, structures, surfaces, etc.”

SOFA-defined Severe Injuries by 14 Attributes and 7 Track Locations  January 1, 1997 to December 31, 2003	yard	main/branch line	industry	siding	highway/roadway	passenger terminal	other	row total	row percent
	<b>JOB CODE</b>								
conductor, yard-614	107	14	30	1	0	0	2	154	16.6%
brakeman, yard-615	90	10	19	1	0	0	5	125	13.5%
conductor, road freight-608	46	68	10	9	9	0	6	148	15.9%
engineer, road freight-617	38	43	1	6	9	0	5	102	11.0%
brakeman, road freight local-613	37	22	14	6	1	0	2	82	8.8%
conductor, road freight local-609	36	32	23	13	0	0	2	106	11.4%
engineer, yard-619	31	4	2	1	2	0	2	42	4.5%
conductor, road passenger-606	18	12	0	0	1	4	3	38	4.1%
engineer, road freight-618	16	9	1	2	2	0	0	30	3.2%
engineer, road passenger-616	14	10	0	0	0	2	0	26	2.8%
brakeman, road freight through-612	10	6	8	5	1	0	0	30	3.2%
switch tender-601	6	3	2	0	0	0	0	11	1.2%
conductor, asst. road passenger-607	5	4	0	0	0	8	1	18	1.9%
hostler, outside-603	3	0	0	0	0	0	0	3	0.3%
brakeman, lead passenger-611	2	1	0	0	0	0	0	3	0.3%
miscellaneous-600	1	0	1	1	0	0	1	4	0.4%
hostler, inside-605	1	0	0	0	0	0	0	1	0.1%
fireman, yard-623	1	0	0	0	0	0	0	1	0.1%
other	3	0	1	0	0	0	1	5	0.5%
<b>column totals</b>	465	238	112	45	25	14	30	929	100.0%
	50%	26%	12%	5%	3%	2%	3%	100.0%	
<b>INJURY TYPE</b>									
fracture-70	368	202	90	40	25	13	26	764	82.2%
amputation-80	83	25	16	3	0	0	2	129	13.9%
other burns-50	9	8	6	2	0	1	2	28	3.0%
electric shock/burns-40	4	2	0	0	0	0	0	6	0.6%
dislocation-60	1	1	0	0	0	0	0	2	0.2%
<b>column totals</b>	465	238	112	45	25	14	30	929	100.0%
	50%	26%	12%	5%	3%	2%	3%	100.0%	

SOFA-defined Severe Injuries by 14 Attributes and 7 Track Locations (cont.)  January 1, 1997 to December 31, 2003									
	yard	main/branch line	industry	siding	highway/roadway	passenger terminal	other	row total	row percent
<b>INJURY LOCATION</b>									
leg or foot	246	113	64	20	3	0	18	464	49.9%
torso	147	81	31	18	18	6	8	309	33.3%
arm or hand	41	20	10	1	3	7	2	84	9.0%
head or face	28	20	7	3	0	1	2	61	6.6%
various body parts-equal severity	3	4	0	3	1	0	0	11	1.2%
<b>column totals</b>	465	238	112	45	25	14	30	929	100.0%
	50%	26%	12%	5%	3%	2%	3%	100.0%	
<b>YEAR</b>									
1997	72	28	23	5	4	1	6	139	15.0%
1998	66	32	18	12	3	0	6	137	14.7%
1999	67	31	16	6	4	3	8	135	14.5%
2000	73	39	18	1	3	4	1	139	15.0%
2001	73	34	17	9	3	1	3	140	15.1%
2002	59	35	12	7	2	5	3	123	13.2%
2003	55	39	8	5	6	0	3	116	12.5%
<b>column totals</b>	465	238	112	45	25	14	30	929	100.0%
	50%	26%	12%	5%	3%	2%	3%	100.0%	
<b>MONTH</b>									
Jan	55	19	11	3	4	2	5	99	10.7%
Feb	48	23	6	4	3	0	5	89	9.6%
Mar	46	21	13	1	0	2	4	87	9.4%
Apr	29	16	9	2	2	1	2	61	6.6%
May	32	22	5	4	3	1	3	70	7.5%
Jun	30	15	7	1	5	0	3	61	6.6%
Jul	33	14	11	6	0	0	0	64	6.9%
Aug	35	25	8	3	2	0	0	73	7.9%
Sep	46	13	14	4	1	5	0	83	8.9%
Oct	37	17	7	7	3	1	3	75	8.1%
Nov	34	29	10	4	1	1	2	81	8.7%
Dec	40	24	11	6	1	1	3	86	9.3%
<b>column totals</b>	465	238	112	45	25	14	30	929	100.0%
	50%	26%	12%	5%	3%	2%	3%	100.0%	

SOFA-defined Severe Injuries by 14 Attributes and 7 Track Locations (cont.)  January 1, 1997 to December 31, 2003	yard	main/branch line	industry	siding	highway/roadway	passenger terminal	other	row total	row percent
	<b>DAY</b>								
Sunday	66	18	8	7	9	4	3	115	12.4%
Monday	67	36	15	9	2	1	2	132	14.2%
Tuesday	64	41	19	7	4	1	6	142	15.3%
Wednesday	64	32	13	6	4	4	7	130	14.0%
Thursday	70	40	23	8	4	2	5	152	16.4%
Friday	74	38	20	1	2	1	5	141	15.2%
Saturday	60	33	14	7		1	2	117	12.6%
<b>column totals</b>	465	238	112	45	25	14	30	929	
	50%	26%	12%	5%	3%	2%	3%	100.0%	100.0%
<b>TIME OF DAY</b>									
00:00-01:00	28	17	6	3	3	0	2	59	6.4%
01:01-02:00	24	12	4	2	2	0	0	44	4.7%
02:01-03:00	22	10	3	1	0	0	1	37	4.0%
03:01-04:00	27	11	1	1	2	1	0	43	4.6%
04:01-05:00	17	2	0	2	1	1	1	24	2.6%
05:01-06:00	10	7	5	5	1	1	3	32	3.4%
06:01-07:00	5	9	3	1	0	0	1	19	2.0%
07:01-08:00	13	11	0	4	2	2	3	35	3.8%
08:01-09:00	21	10	5	1	0	0	1	38	4.1%
09:01-10:00	27	9	5	1	1	0	4	47	5.1%
10:01-11:00	14	11	6	2	1	0	1	35	3.8%
11:01-12:00	18	12	6	1	1	1	2	41	4.4%
12:01-13:00	21	13	11	2	1	0	1	49	5.3%
13:01-14:00	16	10	13	0	1	0	0	40	4.3%
14:01-15:00	19	15	2	1	1	1	3	42	4.5%
15:01-16:00	21	7	2	1	1	1	0	33	3.6%
16:01-17:00	22	13	4	2	0	0	0	41	4.4%
17:01-18:00	21	8	6	3	2	1	0	41	4.4%
18:01-19:00	19	8	7	2	0	1	1	38	4.1%
19:01-20:00	24	6	6	2	0	1	1	40	4.3%
20:01-21:00	19	11	4	2	0	2	2	40	4.3%
21:01-22:00	22	13	6	4	2	1	1	49	5.3%
22:01-23:00	23	6	2	1	3	0	1	36	3.9%
23:01-24:00	12	7	5	1	0	0	1	26	2.8%
<b>column totals</b>	465	238	112	45	25	14	30	929	100.0%
	50%	26%	12%	5%	3%	2%	3%	100.0%	

SOFA-defined Severe Injuries by 14 Attributes and 7 Track Locations (cont.)  January 1, 1997 to December 31, 2003									
	yard	main/branch line	industry	siding	highway/roadway	passenger terminal	other	row total	row percent
<b>ACTIVITY</b>									
walking	123	59	29	14	1	4	10	240	25.8%
riding	64	35	26	8	20	0	0	153	16.5%
getting off	57	25	14	6	0	1	1	104	11.2%
stepping down	34	22	7	3	0	4	6	76	8.2%
getting on	20	5	4	1	0	2	0	32	3.4%
standing	17	7	4	0	1	1	3	33	3.6%
climbing over/on	14	5	4	3	0	0	0	26	2.8%
adjusting coupler	13	0	0	0	0	0	0	13	1.4%
coupling air hose	11	0	0	1	0	0	0	12	1.3%
operating	10	16	1	2	1	0	0	30	3.2%
lining switches	10	5	3	0	0	0	0	18	1.9%
pulling pin/uncoupling	10	2	2	1	0	0	0	15	1.6%
crossing over	10	1	1	2	0	0	0	14	1.5%
stepping	8	2	0	0	0	0	1	11	1.2%
closing	7	4	1	0	0	0	0	12	1.3%
75.. unknown	6	0	1	1	0	0	0	8	0.9%
other	5	4	4	0	0	0	1	14	1.5%
74.. unknown	5	1	1	1	0	0	1	9	1.0%
adjusting, other	5	0	0	0	0	0	1	6	0.6%
jumping from	4	15	3	0	0	0	0	22	2.4%
opening	4	7	0	0	0	0	0	11	1.2%
stepping over	4	3	0	0	0	0	0	7	0.8%
inspecting	3	3	0	0	0	0	0	6	0.6%
sitting	2	5	0	0	1	0	1	9	1.0%
reaching	2	0	1	0	0	0	1	4	0.4%
coupling electric cables	2	0	0	0	0	0	0	2	0.2%
handling car parts	2	0	0	0	0	0	0	2	0.2%
pushing	2	0	0	0	0	0	0	2	0.2%
opening/closing angle cock	1	2	1	0	0	0	0	4	0.4%
bending, stooping	1	0	1	0	0	0	0	2	0.2%
crossing between	1	0	1	0	0	0	0	2	0.2%
driving (vehicle..)	1	0	0	0	1	0	1	3	0.3%
handling material, general	1	0	0	0	0	0	0	1	0.1%
pulling	1	0	0	0	0	0	0	1	0.1%
uncoupling air hose	1	0	0	0	0	0	1	2	0.2%
handling other	0	3	1	0	0	0	0	4	0.4%
jumping onto	0	1	1	0	0	0	0	2	0.2%
cleaning	0	1	0	1	0	0	0	2	0.2%
flagging	0	1	0	0	0	0	0	1	0.1%
handling loc parts	0	1	0	0	0	0	0	1	0.1%

SOFA-defined Severe Injuries by 14 Attributes and 7 Track Locations (cont.)  January 1, 1997 to December 31, 2003									
	yard	main/branch line	industry	siding	highway/roadway	passenger terminal	other	row total	row percent
repairing	1	0	0	0	0	0	0	1	0.1%
running	3	1	0	1	0	0	0	5	0.5%
welding	0	1	0	0	0	0	0	1	0.1%
<b>column totals</b>	465	238	112	45	25	14	30	929	100.0%
	50%	26%	12%	5%	3%	2%	3%	100.0%	
<b>AGE</b>									
15-20	2	0	0	0	0	0	0	2	0.2%
21-26	20	7	9	2	0	0	0	38	4.1%
27-32	53	22	12	5	1	1	2	96	10.3%
33-38	54	22	11	3	3	4	3	100	10.8%
39-44	53	35	10	3	7	1	7	116	12.5%
45-50	88	60	28	10	6	2	10	204	22.0%
51-56	107	51	24	15	4	5	2	208	22.4%
57-62	74	36	17	6	3	1	5	142	15.3%
63-68	14	4	1	1	1	0	1	22	2.4%
69-74	0	1	0	0	0	0	0	1	0.1%
<b>column totals</b>	465	238	112	45	25	14	30	929	100.0%
	50%	26%	12%	5%	3%	2%	3%	100.0%	

SOFA-defined Severe Injuries by 14 Attributes and 7 Track Locations (cont.)  January 1, 1997 to December 31, 2003	yard	main/branch line	industry	siding	highway/roadway	passenger terminal	other	row total	row percent
	<b>INJURY EVENT</b>								
slipped, fell, stumbled, etc. due to object. . .	57	38	10	3	1	2	1	112	12.1%
70-unknown	51	23	13	5	0	1	4	97	10.4%
slipped, fell, stumbled, etc. due to climatic. . .	49	15	9	6	0	1	9	89	9.6%
struck by on-track equipment	44	10	7	2	0	0	0	63	6.8%
lost balance	42	15	9	3	0	4	1	74	8.0%
slipped, fell, stumbled, etc. due to irregular. . .	30	20	4	8	0	1	4	67	7.2%
missed handhold, grabiron, step, etc.	21	5	6	4	0	0	1	37	4.0%
struck against object	20	5	13	1	1	1	2	43	4.6%
68. . unknown	15	4	1	0	0	1	0	21	2.3%
collision between on-track equipment	14	25	2	3	0	0	0	44	4.7%
other (describe in narrative)	13	7	6	0	1	0	0	27	2.9%
sudden/unexpected movement of on-track equipment	12	5	2	0	4	0	0	23	2.5%
slack action, draft, compressive buff/coupling	12	4	0	1	0	0	0	17	1.8%
stepped on object	11	3	2	0	0	0	1	17	1.8%
slipped, fell, stumbled, etc. on oil, grease	10	1	1	1	0	0	1	14	1.5%
derailments	8	7	3	0	0	0	0	18	1.9%
struck by object	6	9	6	0	0	0	0	21	2.3%
defective/malfunctioning equipment	6	2	2	0	0	0	0	10	1.1%
exposure to chemicals-external	5	4	3	0	0	1	0	13	1.4%
ran into object/equipment	5	0	1	1	0	0	0	7	0.8%
caught in or crushed by materials	4	1	1	1	0	0	0	7	0.8%
overexertion	3	2	1	1	0	1	0	8	0.9%
bodily function/sudden movement, e.g., sneezing	3	2	0	0	0	0	0	5	0.5%
sudden/unexpected movement of on-track equipment	2	5	0	0	0	0	1	8	0.9%
sudden/unexpected movement of material	2	1	2	0	0	0	1	6	0.6%
69. . unknown	2	1	0	0	0	0	0	3	0.3%
caught in or compressed by other machinery	2	1	0	0	0	0	1	4	0.4%
ran into on-track equipment	2	1	0	1	0	0	0	4	0.4%
struck by thrown or propelled object	2	0	1	0	0	0	0	3	0.3%
collision/impact-auto, truck, bus, van, etc.	2	0	0	0	18	0	0	20	2.2%
electric shock due to contact with third rail	2	0	0	0	0	0	0	2	0.2%
71. . unknown	1	2	1	0	0	0	0	4	0.4%
other impacts on-track equipment	1	1	1	1	0	0	0	4	0.4%
pushed/shoved into/against	1	1	0	1	0	0	0	3	0.3%
struck by falling object	1	0	2	0	0	0	2	5	0.5%
highway-rail collision/impact	0	16	2	0	0	0	0	18	1.9%
assaulted by other	0	0	0	0	0	0	0	0	0.0%
climatic conditions, other (e.g., high winds)	0	0	0	0	0	0	1	1	0.1%

SOFA-defined Severe Injuries by 14 Attributes and 7 Track Locations (cont.)  January 1, 1997 to December 31, 2003	yard	main/branch line	industry	siding	highway/roadway	passenger terminal	other	row total	row percent
exposure to welding light	0	0	0	0	0	0	0	0	0.0%
pushed/shoved onto	1	0	1	0	0	0	0	2	0.2%
pushed/shove from . . .	0	0	0	0	0	1	0	1	0.1%
rubbed, abraded, etc.	1	0	0	0	0	0	0	1	0.1%
cave in, slide, etc.	0	1	0	0	0	0	0	1	0.1%
sudden release of air	0	1	0	0	0	0	0	1	0.1%
aggregated pre-existing condition	0	0	0	1	0	0	0	1	0.1%
sustained viewing	0	0	0	1	0	0	0	1	0.1%
76 . . unknown	1	0	0	0	0	0	0	1	0.1%
80 . . unknown	1	0	0	0	0	0	0	1	0.1%
<b>column totals</b>	465	238	112	45	25	14	30	929	100.0%
	50%	26%	12%	5%	3%	2%	3%	100.0%	

SOFA-defined Severe Injuries by 14 Attributes and 7 Track Locations (cont.)  January 1, 1997 to December 31, 2003	yard	main/branch line	industry	siding	highway/roadway	passenger terminal	other	row total	row percent
	<b>EQUIPMENT LOCATION</b>								
freight car moving	88	18	31	6	0	0	0	143	15.4%
other non-equip	63	37	17	5	2	1	18	143	15.4%
freight train moving	55	64	24	10	1	0	0	154	16.6%
freight train standing	70	37	6	13	0	0	1	127	13.7%
locomotive standing	76	33	8	6	0	1	4	128	13.8%
freight car standing	45	11	18	5	0	0	2	81	8.7%
locomotive moving	38	14	4	0	0	0	0	56	6.0%
pass train moving	2	11	0	0	0	3	1	17	1.8%
pass train standing	13	4	0	0	0	7	1	25	2.7%
auto	6	0	0	0	4	2	0	12	1.3%
pass car standing	4	1	0	0	0	0	1	6	0.6%
pass car moving	0	1	0	0	0	0	0	1	0.1%
van passenger	0	0	0	0	9	0	1	10	1.1%
taxi	0	0	0	0	9	0	0	9	1.0%
crane	0	1	0	0	0	0	0	1	0.1%
loaders, etc.	0	0	1	0	0	0	1	2	0.2%
other equip	1	1	0	0	0	0	0	2	0.2%
other on-track equip moving	0	0	1	0	0	0	0	1	0.1%
other on-track equip standing	0	1	0	0	0	0	0	1	0.1%
truck	0	1	1	0	0	0	0	2	0.2%
excavating equip	1	0	0	0	0	0	0	1	0.1%
van utility	1	0	0	0	0	0	0	1	0.1%
other operating equip	1	0	0	0	0	0	0	1	0.1%
camp car moving	0	1	0	0	0	0	0	1	0.1%
maintenance equip moving	0	1	0	0	0	0	0	1	0.1%
inspection vehicle moving	0	1	0	0	0	0	0	1	0.1%
unknown	1	0	1	0	0	0	0	2	0.2%
<b>column totals</b>	465	238	112	45	25	14	30	929	100.0%
	50%	26%	12%	5%	3%	2%	3%	100.0%	

SOFA-defined Severe Injuries by 14 Attributes and 7 Track Locations (cont.)  January 1, 1997 to December 31, 2003	yard	main/branch line	industry	siding	highway/roadway	passenger terminal	other	row total	row percent
	<b>WORKING LOCATION</b>								
near on-track equip-on ground	91	32	25	6	0	0	2	156	16.8%
beside track	76	36	25	8	2	0	2	149	16.0%
on side of car	65	15	29	7	1	1	0	118	12.7%
in/on loc	60	73	4	10	0	1	3	151	16.3%
on end of car	30	9	12	6	0	1	1	59	6.4%
other location on loc	25	10	2	1	0	0	2	40	4.3%
between cars/loc	25	6	3	2	0	0	1	37	4.0%
between tracks	24	5	5	0	0	0	0	34	3.7%
on track	19	4	1	2	0	0	0	26	2.8%
on ladder	14	3	0	1	0	0	0	18	1.9%
other location	9	2	1	0	0	0	1	13	1.4%
on stairs	8	8	2	0	0	1	5	24	2.6%
at work station	7	6	0	0	0	5	8	26	2.8%
on platform	5	8	3	0	0	4	2	22	2.4%
on bridge/trestle	3	5	0	0	0	0	0	8	0.9%
in car	2	9	0	1	3	1	0	16	1.7%
under car	1	1	0	0	0	0	0	2	0.2%
in/operating vehicle	1	0	0	0	17	0	1	19	2.0%
on highway-rail crossing	0	6	0	0	2	0	0	8	0.9%
in tower	0	0	0	0	0	0	1	1	0.1%
on pole/signal mast	0	0	0	1	0	0	0	1	0.1%
under loc	0	0	0	0	0	0	1	1	0.1%
<b>column totals</b>	465	238	112	45	25	14	30	929	100.0%
	50%	26%	12%	5%	3%	2%	3%	100.0%	

<b>SOFA-defined Severe Injuries by 14 Attributes and 7 Track Locations (cont.)  January 1, 1997 to December 31, 2003</b>	<b>yard</b>	<b>main/branch line</b>	<b>industry</b>	<b>siding</b>	<b>highway/roadway</b>	<b>passenger terminal</b>	<b>other</b>	<b>row total</b>	<b>row percent</b>
<b>TOOLS, MACHINERY, APPLIANCES, STRUCTURES, SURFACES (ETC.)</b>									
ground	160	70	38	11	0	1	9	289	31.1%
other	53	27	24	4	0	1	8	117	12.6%
ballast	49	30	8	8	0	0	2	97	10.4%
ladder	28	9	12	3	0	0	0	52	5.6%
36...unknown	25	2	3	4	0	0	0	34	3.7%
grabiron	20	5	4	2	0	0	0	31	3.3%
coupler	20	2	2	0	0	0	0	24	2.6%
floor	14	22	1	3	2	1	3	46	5.0%
switch	13	2	5	3	0	0	0	23	2.5%
door	12	11	1	0	0	1	1	26	2.8%
tie	11	2	2	2	0	0	0	17	1.8%
stair	9	13	1	1	0	1	6	31	3.3%
43...unknown	9	2	0	3	0	7	0	21	2.3%
37...unknown	8	0	0	0	0	0	0	8	0.9%
34...unknown	4	7	0	0	1	0	0	12	1.3%
hose	4	3	1	0	0	0	0	8	0.9%
baggage	4	1	0	0	0	1	0	6	0.6%
bridge/trestle	3	5	1	0	0	0	0	9	1.0%
42...unknown	3	2	1	0	1	0	0	7	0.8%
end of train device	3	1	0	1	0	0	0	5	0.5%
46...unknown	2	2	2	0	0	0	0	6	0.6%

SOFA-defined Severe Injuries by 14 Attributes and 7 Track Locations (cont.)  January 1, 1997 to December 31, 2003	yard	main/branch line	industry	siding	highway/roadway	passenger terminal	other	row total	row percent
41...unknown	2	0	0	0	0	0	0	2	0.2%
81...unknown	2	0	0	0	0	0	0	2	0.2%
window	2	0	0	0	0	0	0	2	0.2%
highway, street, road	1	9	2	0	18	0	0	30	3.2%
38...unknown	1	3	0	0	0	0	0	4	0.4%
caboose	1	1	0	0	0	0	0	2	0.2%
TOFC, COFC	1	1	0	0	0	0	0	2	0.2%
fusees/torpedoes	1	0	0	0	0	0	0	1	0.1%
derail	0	2	1	0	0	0	0	3	0.3%
40...unknown	0	1	0	0	0	0	0	1	0.1%
82...unknown	0	1	0	0	0	0	0	1	0.1%
87...unknown	0	1	0	0	0	0	0	1	0.1%
welder-electric	0	1	0	0	0	0	0	1	0.1%
35...unknown	0	0	1	0	0	0	0	1	0.1%
44...unknown	0	0	1	0	0	0	0	1	0.1%
cutting tools	0	0	1	0	0	0	0	1	0.1%
39...unknown	0	0	0	0	0	1	0	1	0.1%
not coded	0	0	0	0	3	0	0	3	0.3%
torch, acetylene, gas, etc.	0	0	0	0	0	0	1	1	0.1%
<b>column totals</b>	465	238	112	45	25	14	30	929	100.0%
	50%	26%	12%	5%	3%	2%	3%	100.0%	

<b>SOFA-defined Severe Injuries by 14 Attributes and 7 Track Locations (cont.) January 1, 1997 to December 31, 2003</b>	<b>yard</b>	<b>main/branch line</b>	<b>industry</b>	<b>siding</b>	<b>highway/roadway</b>	<b>passenger terminal</b>	<b>other</b>	<b>row total</b>	<b>row percent</b>
<b>ASSIGNED CAUSE OF INJURY</b>									
human factors	193	100	35	21	13	8	12	382	41.1%
undetermined	130	80	43	12	8	1	10	284	30.6%
environmental	56	19	14	9	4	4	7	113	12.2%
equip procedures not followed	49	15	8	1	0	1	0	74	8.0%
equipment	27	13	7	1	0	0	0	48	5.2%
track	4	4	3	0	0	0	0	11	1.2%
other	3	1	1	0	0	0	0	5	0.5%
physical condition	2	2	0	0	0	0	0	4	0.4%
trespassing	1	2	0	0	0	0	0	3	0.3%
no safety equip	0	1	1	1	0	0	1	4	0.4%
substance use	0	1	0	0	0	0	0	1	0.1%
<b>column totals</b>	465	238	112	45	25	14	30	929	100.0%
	50%	26%	12%	5%	3%	2%	3%	100.0%	

