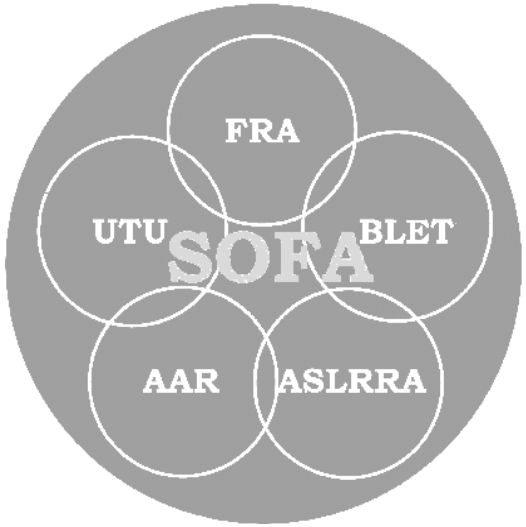
Please Post Immediately

Apply SOFA Operating Recommendations – Recognize Special Switching Hazards



December 2005 Switching Fatality and Severe Injury Update

Switching Fatality Risk:

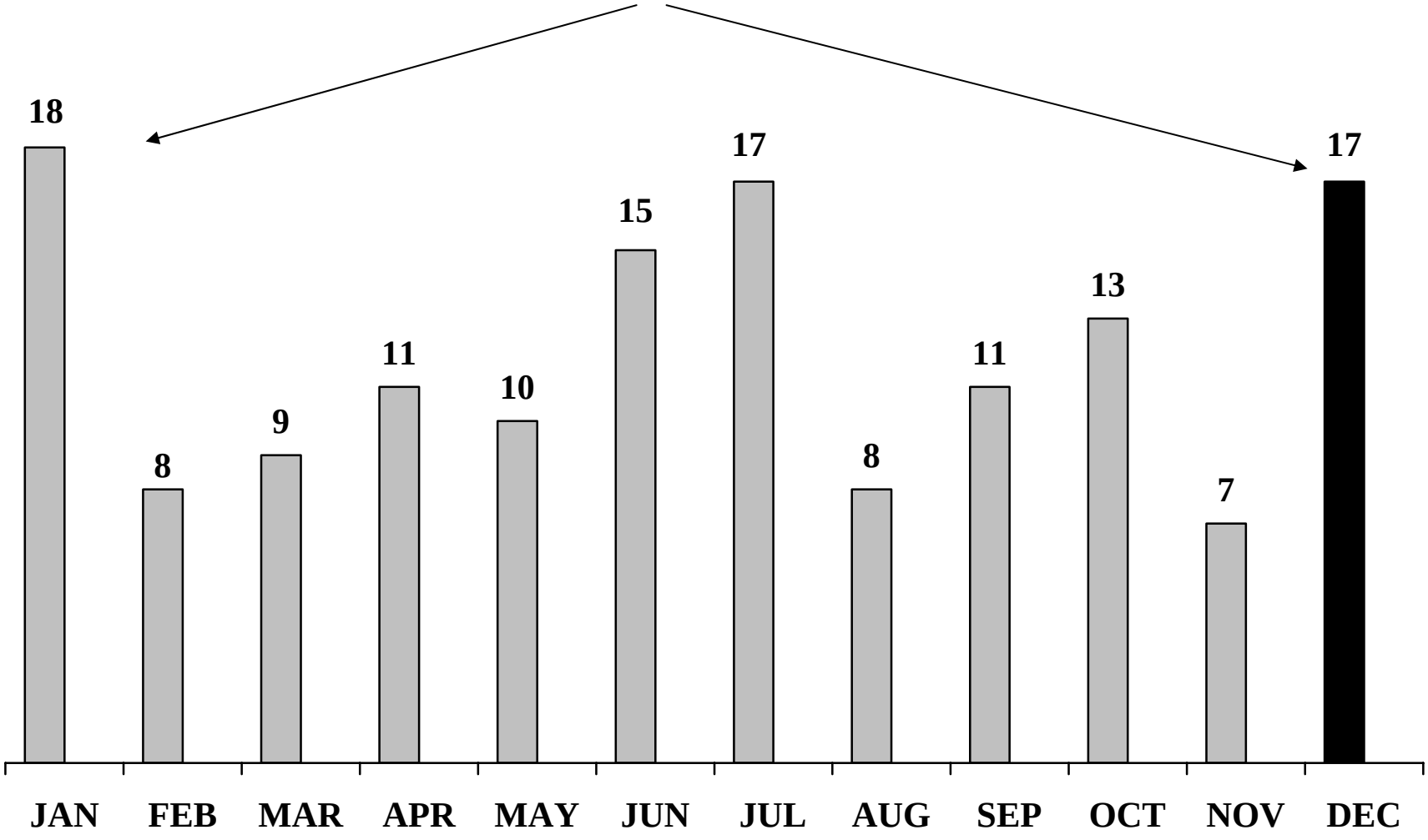
17 Switching Fatalities occurred in December since 1992. In January, 18 Fatalities occurred. While there is always risk to employees engaged in switching operations, **the next two months are particularly risky**. Twenty-four percent of Fatalities occur in December and January. Nine Switching Fatalities have already occurred in 2005, the last on August 15. On average, 10.5 Switching Fatalities occur each year.

Severe Injury Risk:

100 Severe Injuries occurred in December since 1997. In January, 131 Severe Injuries occurred. Like Switching Fatalities, while there is always risk of Severe Injuries, **the next two months are particularly risky**. Twenty-one percent of Severe Injuries occur in December and January. *Applying SOFA Operating Recommendations – Recognizing Special Switching Hazards* can reduce Severe Injuries, the SOFA Working Group believes. However, the SOFA Working Group does not have knowledge of all the causes of Severe Injuries.

17 of 144 (11.9%) Switching Fatalities since 1992 Occurred in December

<u>Please Note</u>: While there is always risk to employees engaged in switching operations, December and January represent 24.3 percent of the 144 Switching Fatalities occurring since January 1992.



35 Switching Fatalities in December and January: 24.3 Percent of all Fatalities since 1992 by Calendar Date, Day of Week, Age, and Years of Service

December

#	Date	Day of Week	Location	Age	Years of Service
1	12/02/97	Tuesday	Emporia, KS	50	30
2	12/05/93	Sunday	Atlanta, GA	59	29
3	12/06/94	Tuesday	Campbell Hall, NY	28	0.2
4	12/07/03	Sunday	San Antonio, TX	37	5.6
5	12/11/95	Monday	Toledo, OH	53	32
6	12/13/94	Tuesday	Thorton, CA	48	26
7	12/14/95	Thursday	Monroe, NC	54	33
8	12/16/96	Monday	Clinton, IA	51	21
9	12/17/04	Friday	Radium, CO	--	--
10	12/18/96	Wednesday	Chicago, IL	45	26
11	12/22/01	Saturday	Eden, NC	50	29
12	12/24/01	Monday	Lynchburg, VA	30	4.5
13	12/26/97	Friday	Boise, ID	55	32
14	12/28/98	Monday	Durrant, MS	55	26
15	12/28/00	Thursday	Dupo, IL	52	30
16	12/29/00	Friday	Gillette, WY	29	6
17	12/30/93	Thursday	Brook Park, OH	61	38

January

#	Date	Day of Week	Location	Age	Years of Service
1	01/02/00	Sunday	Cedar Springs, GA	49	21
2	01/04/94	Tuesday	Hastings, NE	46	20
3	01/10/01	Wednesday	Chicago, IL	42	1
4	01/10/05	Monday	Buena Vista, AR	53	--
5	01/11/95	Wednesday	Indianapolis, IN	51	30
6	01/11/01	Thursday	South Fork, PA	52	34
7	01/12/97	Sunday	S Fontana, CA	60	35
8	01/12/99	Tuesday	Port Newark, NJ	54	5.5
9	01/14/94	Friday	Amarillo, TX	57	36
10	01/14/04	Wednesday	Kankakee, IL	--	--
11	01/18/94	Tuesday	Bainbridge, GA	45	25
12	01/20/94	Thursday	Fall City, NE	44	16
13	01/22/99	Friday	Alexandria, NY	45	1
14	01/24/98	Saturday	Omaha, NE	47	26
15	01/26/05	Wednesday	Los Angeles, CA	52	--
16	01/28/92	Tuesday	Willmar, MN	57	22
17	01/29/97	Wednesday	Mason City, IA	48	28
18	01/30/92	Thursday	Polk County, FL	32	0.5

The average age for employees, whose ages have been verified, is 47.3 years for December; and 49.1 years for January. For both December and January, the average age is 48.2 years. The average for the other 10 months is 44.5 years.

The average years of service for employees, whose years of service have been verified, are 23.0 years for December; and 20.1 years for January. For both December and January, the average years of service is 21.6 years. The average for the other 10 months is 17.7 years.

Switching Operations Fatality Analysis (SOFA)

Comprised of union, management, and government representatives, the SOFA Working Group (SWG) is trying to achieve a Zero Switching Fatality Goal through education (based on review of 124 Fatalities) of why Switching Fatalities occur. And how such Fatalities, averaging 10.5 per year, can be prevented. Historically, about half of the Switching Fatalities since January 1992 involved one or more of the Five SOFA Operating Recommendations. The remaining Fatalities involved one or more Special Switching Hazards.

Within the past two years, the mix has changed (see page 6). Now the majority of Switching Fatalities involve Special Switching Hazards. The SWG believes the industry's emphasis on the Five Operating Recommendations had a positive effect – as will continued emphasis. But to Achieve the Zero Switching Fatalities Goal, additional emphasis is needed on recognizing Special Switching Hazards.

Special Switching Hazards

- Close Clearances*
- Free Rolling Railcars
- Exposure to Mainline Trains
- Tripping, Slipping, or Falling Exposures
- Adverse Environmental Conditions
- Shoving Movements
- Unsecured Cars
- Unexpected Movement of Cars
- Equipment Defects
- Motor Vehicles or Loading Devices
- Drugs and Alcohol

11 of 17 (65 percent) December Switching Fatalities involved Special Switching Hazards

SWG also monitors Severe Injuries occurring to employees engaged in switching operations. On average, each year 131.3 Severe Injuries occur. These Injuries are acute: amputations, multiple fractures, loss of eye, electric shock or burn – having a high likelihood of impacting an employee's quality of life and ability to work. SWG believes *Applying SOFA Operating Recommendations – Recognizing Special Switching Hazards* can reduce Severe Injuries. However, SWG does not have knowledge of all the causes of Severe Injuries.

* The SOFA Working Group has broadened the traditional definition of 'close clearances' to include situations "When an employee is passing, or being passed, by an object or equipment and the conditions are such that there is not enough room for the employee to avoid being struck." From *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. p. 48-50.

December Fatalities Involving Special Switching Hazards

"In addition to the Five Operating Recommendations, the SWG (SOFA Working Group) wants to make those engaged in switching operations aware of Special Switching Hazards. In its review of each of the 124 fatalities, the SWG identified a number of fatalities involving close clearances (10 fatalities), being struck by mainline trains (8 fatalities), and occurring during shove movements (61 fatalities). The number of fatalities involving close clearance and being struck by mainline trains would be greater if those classified both as a Special Switching Hazard and an Operating Recommendation were included in these fatality counts." - from *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. p. xiv.

12/30/93	**Brook Park, OH**	**Environmental**
12/11/95	**Toledo, OH**	**Close Clearance**
12/14/95	**Monroe, NC**	**Close Clearance**
12/16/96	**Clinton, IA**	**Employee Tripping, and Drugs and Alcohol**
12/18/96	**Chicago, IL**	**Unsecured Cars**
12/02/97	**Emporia, KS**	**Struck by Mainline Trains**
12/28/00	**Dupo, IL**	**Struck by Mainline Trains**
12/29/00	**Gillette, WY**	**Struck by Mainline Trains**
12/22/01	**Eden, NC**	**Struck by Motor Vehicle**
12/24/01	**Lynchburg, VA**	**Close Clearance and Struck by Mainline Trains**
12/07/03	**San Antonio, TX**	**Unexpected Movement of railcars**

Recognize Special Switching Hazards

- Close Clearances *
- Free Rolling Railcars
- Exposure to Mainline Trains
- Tripping, Slipping, or Falling Exposures
- Adverse Environmental Conditions
- Shoving Movements
- Unsecured Cars
- Unexpected Movement of Cars
- Equipment Defects
- Motor Vehicles or Loading Devices
- Drugs and Alcohol

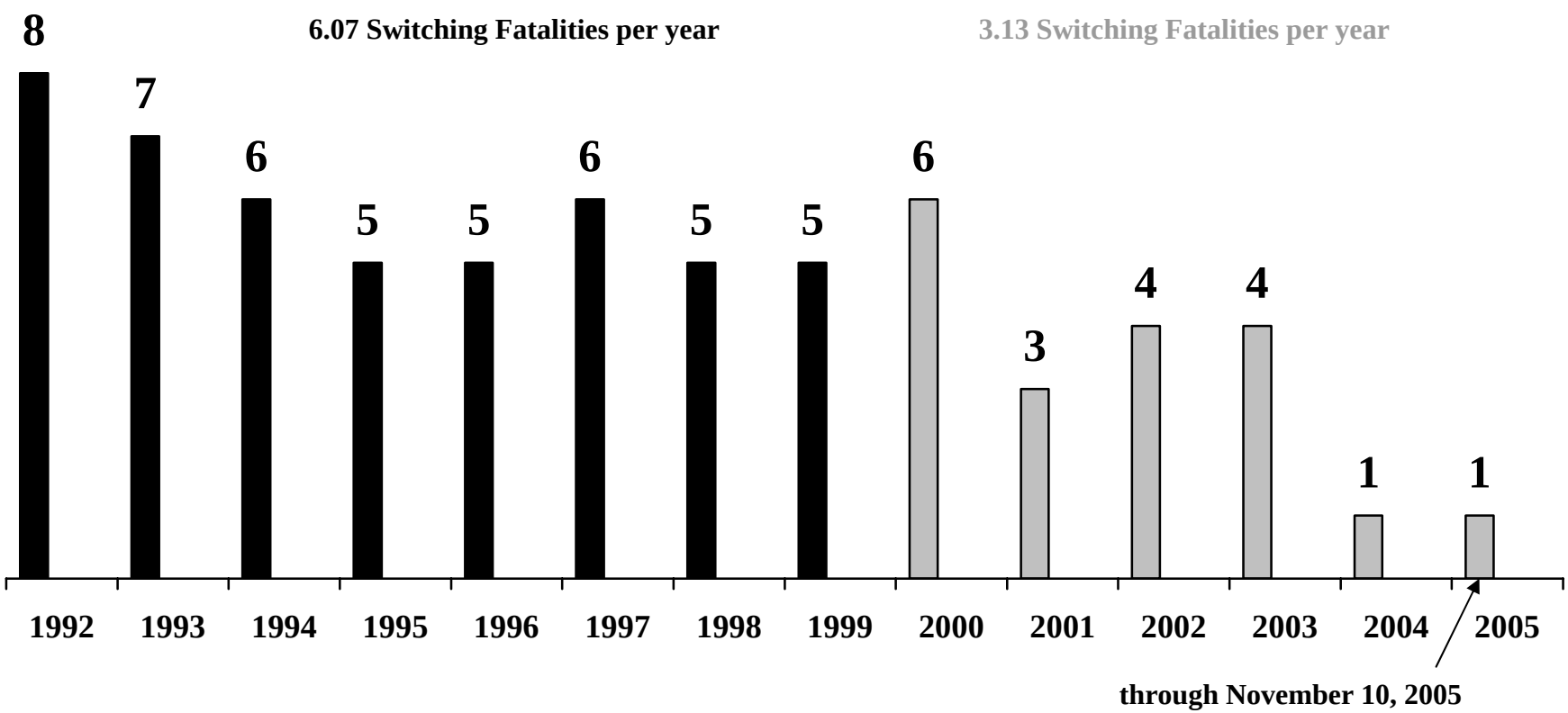
The SOFA Working Group has broadened the traditional definition of 'close clearances' to include situations "When an employee is passing, or being passed, by an object or equipment and the conditions are such that there is not enough room for the employee to avoid being struck." From *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. p.48-50. Available at: http://www.fra.dot.gov/us/content/102

66 of 144 (45.8%) Switching Fatalities Related to Five SOFA Operating Recommendations

- There were 47 Switching Fatalities related to the Five Operating Recommendations in the pre-SOFA Report period, January 1992 through September 1999 – 7.75 years. The original SOFA Report[1] was released in October 1999.

- **There were 19 Switching Fatalities related to the Five Operating Recommendations in the post-SOFA Report period, October 1999 through October 2005 – 6.08 years.**

- Expressed as rates per year: 6.07 fatalities per year, pre-SOFA Report v. 3.13 fatalities per year, post-SOFA Report.



[1] *Findings and Recommendations of the SOFA Working Group*. October 1999. Available at http://www.fra.dot.gov/us/content/102

17 December Switching Fatalities, January 1992 through September 2004

#	Date	RR	Location	Age	Service (yrs)	Employee's Job	Employee Act	Employee Location	Fatal Event	SOFA Recommendations	Special Switching Hazard
1	12/05/93	SOU	Atlanta, GA	59	29	road conductor	getting off	between tracks	struck by on-track equipment	**3**	
2	12/30/93	CR	Brook Park, OH	61	38	yard conductor	riding	on side of car	derailments		**Environment**
3	12/06/94	CR	Campbell Hall, NY	28	0.17	brakeman trainee	riding	in caboose	ran into on-track equipment	**2, 4, 5**	
4	12/13/94	UP	Thorton, CA	48	26	road brakemen	adjusting coupler	between cars/loc	sudden/unexpected movement of on-track equipment	**1**	
5	12/11/95	NS	Toledo, OH	53	32	yard brakeman	standing	on ground near on-track equip.	rolled between fixed		**Close Clearance**
6	12/14/95	CSXT	Monroe, NC	54	33	road conductor	riding	on side of car	struck against object		**Close Clearance**
7	12/16/96	UP	Clinton, IA	51	21	road brakemen	riding	between cars/loc	struck by on-track equipment		**Employee Tripping and Drugs and Alcohol**
8	12/18/96	IC	Chicago, IL	45	26	yard conductor	riding	on end of car	struck by on-track equipment		**Unsecured Cars**
9	12/02/97	BNSF	Emporia, KS	50	30	road conductor	standing	between tracks	struck by on-track equipment		**Struck by Mainline Trains**
10	12/26/97	UP	Boise, ID	55	32	road conductor	opening/closing angle cock	on track	sudden/unexpected movement of on-track equipment	**4**	
11	12/28/98	IC	Durrant, MS	55	26	road conductor	riding	other location	derailments	**4**	
12	12/28/00	UP	Dupo, IL	52	30	yard brakeman	standing	on track	struck by on-track equipment		**Struck by Mainline Trains**
13	12/29/00	BNSF	Gillette, WY	29	6	road conductor	walking	on track	struck by on-track equipment		**Struck by Mainline Trains**
14	12/22/01	NS	Eden, NC	50	29	road brakemen	riding	on side of car	collision/impact-auto, truck, bus, van, etc.		**Struck by Motor Vehicle**
15	12/24/01	NS	Lynchburg, VA	30	4.5	road conductor	walking	near on-track equip-on ground	struck by on-track equipment		**Close Clearance and Struck by Mainline Trains**
16	12/07/03	UP	San Antonio, TX	37	5.75	remote control operator (RCO)	operating	on track	struck by on-track equipment		**Unexp. Movement of Railcars**
17	12/17/04	BNSF	Radium, CO	**Being reviewed by SOFA Working Group**							

December Switching Fatalities

Note: The Switching Fatality narrative summaries are taken from *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. All other information is from the SOFA Matrix, the SOFA Working Group's electronic database.

No. 1 of 17: December 05, 1993 – SOU – Atlanta, GA

Change in operating procedure between two crews swapping equipment resulted in conductor being struck by unexpected movement while he was in the foul of the track.

SOFA Operating Recommendation(s):	**3**
Possible Contributing Factor:	Employee on or fouling track
Possible Contributing Factor:	Dismounted moving equipment at 8 mph
External Circumstances:	Elevation difference between tracks and large ballast
Day of Week:	Sunday
Time of Fatal Event:	7:00 AM
Time on Duty (hours: minutes):	3:15
Temperature (Fahrenheit):	55
Direction of Movement:	pulled
Crew's Next Move:	line switch
Death Result of Train Movement?	yes
Other Movements Nearby?	yes
Track Type:	main/siding
Hit by Own Equipment?	no
Striking Train Within Rules?	yes
Speed of Equipment (mph):	2
Deceased Regular Job?	no
Crew Size:	2
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

December Switching Fatalities

Note: The Switching Fatality narrative summaries are taken from *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. All other information is from the SOFA Matrix, the SOFA Working Group's electronic database.

No. 2 of 17: December 30, 1993 – CR – Brook Park, OH

A three-person industrial switching crew was shoving over an industrial crossing within the confines of a plant. The conductor was riding the leading end of the lead car when it rode up on ice, built up within the flange-ways, and derailed the car into the side of the building. The conductor was crushed between the car he was riding and the building.

Special Switching Hazard(s):	**Environment**
Possible Contributing Factor:	Other roadbed defects
Possible Contributing Factor:	Snow, ice, mud, gravel, coal etc. on the track
Possible Contributing Factor:	Switching movement, excessive speed
External Circumstances:	Others assisted crew
Day of Week:	Thursday
Time of Fatal Event:	9:20 AM
Time on Duty (hours: minutes):	1:21
Direction of Movement:	shoved
Crew's Next Move:	spot car
Death Result of Train Movement?	yes
Other Movements Nearby?	no
Track Type:	industrial/outside/stub track
Hit by Own Equipment?	yes
Speed of Equipment (mph):	8
Had Deceased Worked There Before?	yes
Crew Size:	3
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

December Switching Fatalities

Note: The Switching Fatality narrative summaries are taken from *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. All other information is from the SOFA Matrix, the SOFA Working Group's electronic database.

No. 3 of 17: December 06, 1994 – CR – Campbell Hall, NY

First local had left the immediate location of the work area to be used by the second local without notifying the second local of the position of the switches, derails or returning the switches to a non-conflicting position. Second local shoving three cars and a caboose with a two-month trainee directing the move, struck standing equipment after traversing switches that were unexpectedly lined for the equipment.

SOFA Operating Recommendation(s):	**2,4,5**
Possible Contributing Factor:	Poor crew utilization
Possible Contributing Factor:	Radio communication, improper
Possible Contributing Factor:	Shoving movement, man on or at leading end of movement, failure to control
Possible Contributing Factor:	Failure to comply with restricted speed
Possible Contributing Factor:	Radio communication, failure to give/receive
Possible Contributing Factor:	Derail, failure to apply or remove
Possible Contributing Factor:	Speed, other
Day of Week:	Tuesday
Time of Fatal Event:	2:52 AM
Time on Duty (hours: minutes):	6:52
Temperature (Fahrenheit):	51
Direction of Movement:	shoved
Crew's Next Move:	set out cars
Death Result of Train Movement?	yes
Other Movements Nearby?	no
Track Type:	yard/flat/storage
Hit by Own Equipment?	no
Striking Train Within Rules?	no
Speed of Equipment (mph):	19
Deceased Regular Job?	no
Had Deceased Worked There Before?	yes
Crew Size:	3
Emergency Response Procedures Followed?	yes

December Switching Fatalities

Note: The Switching Fatality narrative summaries are taken from *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. All other information is from the SOFA Matrix, the SOFA Working Group's electronic database.

No. 4 of 17: December 13, 1994 – UP – Thorton, CA

Crew coupling up cars in an industry track, brakeman attempted to couple air between cars when unexpected movement of railcars occurred, resulting in his fatal injury.

SOFA Operating Recommendation(s):	**1**
Possible Contributing Factor:	Failure to provide adequate space between equipment
External Circumstances:	Employee on or fouling track
Day of Week:	Tuesday
Time of Fatal Event:	12:01 AM
Time on Duty (hours: minutes):	2:16
Temperature (Fahrenheit):	34
Direction of Movement:	pulled
Crew's Next Move:	CO power
Death Result of Train Movement?	yes
Other Movements Nearby?	no
Track Type:	industrial/spot/ load and unload/outside
Hit by Own Equipment?	yes
Striking Train Within Rules?	yes
Speed of Equipment (mph):	1
Deceased Regular Job?	no
Had Deceased Worked There Before?	yes
Crew Size:	4
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

December Switching Fatalities

Note: The Switching Fatality narrative summaries are taken from *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. All other information is from the SOFA Matrix, the SOFA Working Group's electronic database.

No. 5 of 17: December 11, 1995 – NS – Toledo, OH

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.

Special Switching Hazard(s):	**Close Clearance**
Possible Contributing Factor:	Snow, ice, mud, gravel, coal etc. on the track
Possible Contributing Factor:	Close or no clearance
Possible Contributing Factor:	Employee on or fouling track
Day of Week:	Monday
Time of Fatal Event:	6:25 PM
Time on Duty (hours: minutes):	2:25
Temperature (Fahrenheit):	12
Direction of Movement:	pulled
Crew's Next Move:	set out cars
Death Result of Train Movement?	yes
Other Movements Nearby?	no
Track Type:	industrial/spot/load and unload/inside
Hit by Own Equipment?	yes
Striking Train Within Rules?	yes
Speed of Equipment (mph):	3
Deceased Regular Job?	yes
Crew Size:	3
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

December Switching Fatalities

Note: The Switching Fatality narrative summaries are taken from *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. All other information is from the SOFA Matrix, the SOFA Working Group's electronic database.

No. 6 of 17: December 14, 1995 – CSX – Monroe, NC

A three-person crew (engineer, conductor & conductor trainee) was called to operate a local freight train. During a switching operation at a yard, the conductor was riding nine cars down a clear track and directing the shove move by radio. When the engineer did not hear any more radio transmissions from the conductor, he stopped the move and found the conductor dead and lying beside the track he had been shoving down. Post accident investigation revealed that he had been struck by a truck trailer door positioned on a flat car standing on an adjacent track and that had been left open and swinging freely. The investigation revealed that a vandal had broken into the trailer and stolen material from it.

Special Switching Hazard(s):	**Close Clearance**
Possible Contributing Factor:	Vandalism of on-track equipment, i.e. brakes released
Possible Contributing Factor:	Object or equipment on or fouling the tracks (other than above) not vandalism
Day of Week:	Thursday
Time of Fatal Event:	4:30 AM
Time on Duty (hours: minutes):	7:30
Temperature (Fahrenheit):	44
Direction of Movement:	shoved
Crew's Next Move:	cut engine off
Death Result of Train Movement?	yes
Other Movements Nearby?	no
Track Type:	yard/flat/classification
Hit by Own Equipment?	yes
Striking Train Within Rules?	yes
Speed of Equipment (mph):	8
Deceased Regular Job?	yes
Crew Size:	3
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

December Switching Fatalities

Note: The Switching Fatality narrative summaries are taken from *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. All other information is from the SOFA Matrix, the SOFA Working Group's electronic database.

No. 7 of 17: December 16, 1996 – UP – Clinton, IA

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.

Special Switching Hazard(s):	**Employee Tripping and Drugs and Alcohol**
Possible Contributing Factor:	Employee falling from moving equipment
Possible Contributing Factor:	Impairment of efficiency or judgment because of drugs or alcohol
Day of Week:	Monday
Time of Fatal Event:	8:40 PM
Time on Duty (hours: minutes):	5:40
Temperature (Fahrenheit):	32
Direction of Movement:	pulled
Crew's Next Move:	CO power
Death Result of Train Movement?	yes
Other Movements Nearby?	no
Track Type:	outside
Hit by Own Equipment?	yes
Striking Train Within Rules?	yes
Speed of Equipment (mph):	1
Deceased Regular Job?	yes
Crew Size:	3
Drugs Present?	yes
Drugs a Factor?	yes

December Switching Fatalities

Note: The Switching Fatality narrative summaries are taken from *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. All other information is from the SOFA Matrix, the SOFA Working Group's electronic database.

No. 8 of 17: December 18, 1996 – IC – Chicago, IL

A three-person yard crew was in the process of switching a plant. The brakeman was at the plant doors and the conductor and engineer had hauled out to put away a car that had been removed from the plant. After the conductor had tied onto the cars to go into the plant and begun to shove toward the plant, the car that had just been placed on an adjacent track rolled out, fouled the conductor's movement, and crushed him between the leading car and the rolling car.

Special Switching Hazard(s):	**Unsecured Cars**
Possible Contributing Factor:	Failure to properly secure hand brake on car(s) railroad employee
Possible Contributing Factor:	Shoving movement, man on or at leading end of movement, failure to control
Possible Contributing Factor:	Broken brake pipe or connections
Day of Week:	Wednesday
Time of Fatal Event:	11:40 AM
Time on Duty (hours: minutes):	5:55
Temperature (Fahrenheit):	15
Direction of Movement:	shoved/free-running
Crew's Next Move:	spot cars
Death Result of Train Movement?	yes
Other Movements Nearby?	no
Track Type:	outside
Hit by Own Equipment?	yes
Speed of Equipment (mph):	4
Deceased Regular Job?	yes
Crew Size:	3
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

December Switching Fatalities

Note: The Switching Fatality narrative summaries are taken from *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. All other information is from the SOFA Matrix, the SOFA Working Group's electronic database.

No. 9 of 17: December 02, 1997 – BNSF – Emporia, KS

The three-person crew had just finished making up their train at the yard. The conductor, for unknown reasons, had positioned himself on the "live" main trackside of his train, near the second and third locomotives. The conductor was struck and killed by a passing main track train that had approached the area from the opposite direction than that the conductor's train was to proceed.

Special Switching Hazard(s):	**Struck by Mainline Trains**
Possible Contributing Factor:	Employee on or fouling track
Day of Week:	Tuesday
Time of Fatal Event:	7:45 PM
Time on Duty (hours: minutes):	9:45
Temperature (Fahrenheit):	43
Direction of Movement:	pulled
Crew's Next Move:	couple train
Death Result of Train Movement?	yes
Other Movements Nearby?	yes
Track Type:	main/yard
Hit by Own Equipment?	no
Striking Train Within Rules?	yes
Speed of Equipment (mph):	54
Deceased Regular Job?	yes
Crew Size:	3
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

December Switching Fatalities

Note: The Switching Fatality narrative summaries are taken from *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. All other information is from the SOFA Matrix, the SOFA Working Group's electronic database.

No. 10 of 17: December 26, 1997 – UP – Boise, ID

Conductor was riding equipment while setting hand brakes. Move was being shoved; improper radio communication.

SOFA Operating Recommendation(s):	**4**
Possible Contributing Factor:	Employee on or fouling track
Possible Contributing Factor:	Poor intra-crew communication about work in progress
Possible Contributing Factor:	Radio communication, improper
External Circumstances:	Grade crossing placement
Day of Week:	Friday
Time of Fatal Event:	5:45 PM
Time on Duty (hours: minutes):	9:30
Temperature (Fahrenheit):	27
Direction of Movement:	shoved
Crew's Next Move:	uncouple cars to spot
Death Result of Train Movement?	yes
Other Movements Nearby?	no
Track Type:	main/industrial
Hit by Own Equipment?	yes
Striking Train Within Rules?	no
Speed of Equipment (mph):	3
Deceased Regular Job?	yes
Crew Size:	3
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

December Switching Fatalities

Note: The Switching Fatality narrative summaries are taken from *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. All other information is from the SOFA Matrix, the SOFA Working Group's electronic database.

No. 11 of 17: December 28, 1998 – IC – Durrant, MS

Shove movement was not properly controlled by radio communication and resulted in a collision with a fallen tree which caused the derailment and death of the conductor.

SOFA Operating Recommendation(s):	**4**
Possible Contributing Factor:	Radio communication, failure to give/receive
Possible Contributing Factor:	H603
Possible Contributing Factor:	Shoving movement, man on or at leading end of movement, failure to control
Possible Contributing Factor:	Object or equipment on or fouling the tracks (other than above) not vandalism
External Circumstances:	Extended shove move and type of equipment
Day of Week:	Monday
Time of Fatal Event:	4:32 PM
Time on Duty (hours: minutes):	0:33
Temperature (Fahrenheit):	36
Direction of Movement:	shoved
Crew's Next Move:	stop at switch
Death Result of Train Movement?	yes
Other Movements Nearby?	no
Track Type:	main
Hit by Own Equipment?	yes
Striking Train Within Rules?	no
Speed of Equipment (mph):	22
Deceased Regular Job?	yes
Crew Size:	3
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

December Switching Fatalities

Note: The Switching Fatality narrative summaries are taken from *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. All other information is from the SOFA Matrix, the SOFA Working Group's electronic database.

No. 12 of 17: December 28, 2000 – UP – Dupo, IL

A three-person yard switching crew was in the process of pulling cars down a long lead that ran parallel to a main track. The switchman was standing between the cars that were being pulled out onto the lead and the main track. While the cars were being moved, a main line train approached his location. The switchman, with nowhere to go, was struck by the passing main line train and killed by a blow to the head.

Special Switching Hazard(s):	**Struck by Mainline Trains**
Possible Contributing Factor:	Employee on or fouling track
Possible Contributing Factor:	T105
External Circumstances:	Snow and ice
Day of Week:	Thursday
Time of Fatal Event:	8:10 AM
Time on Duty (hours: minutes):	1:40
Temperature (Fahrenheit):	8
Direction of Movement:	pulled
Crew's Next Move:	line switch
Death Result of Train Movement?	yes
Other Movements Nearby?	yes
Track Type:	main
Hit by Own Equipment?	no
Striking Train Within Rules?	yes
Speed of Equipment (mph):	29
Deceased Regular Job?	yes
Crew Size:	3
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

December Switching Fatalities

Note: The Switching Fatality narrative summaries are taken from *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. All other information is from the SOFA Matrix, the SOFA Working Group's electronic database.

No. 13 of 17: December 29, 2000 – BNSF – Gillette, WY

A two-person freight train crew was about to be passed by another freight train at a location on line-of-road. The conductor of the stopped train got up out of his seat, exited the leading locomotive and crossed over the track on which the on-coming train was proceeding. The conductor was struck and killed by the lead locomotive of the passing train.

Special Switching Hazard(s):	**Struck by Mainline Trains**
Possible Contributing Factor:	Employee physical condition, other
Possible Contributing Factor:	Employee on or fouling track
External Circumstances:	Using cell phone
Day of Week:	Friday
Time of Fatal Event:	9:28 PM
Time on Duty (hours: minutes):	4:08
Temperature (Fahrenheit):	20
Direction of Movement:	pulled
Crew's Next Move:	inspect train
Death Result of Train Movement?	yes
Other Movements Nearby?	yes
Track Type:	main
Hit by Own Equipment?	no
Striking Train Within Rules?	yes
Speed of Equipment (mph):	43
Deceased Regular Job?	yes
Crew Size:	2
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

December Switching Fatalities

Note: The Switching Fatality narrative summaries are taken from *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. All other information is from the SOFA Matrix, the SOFA Working Group's electronic database.

No. 14 of 17: December 22, 2001 – NS – Eden, NC

A three-person, local switching crew that included a conductor in training were in the process of shoving a cut of cars over a highway road crossing at grade. The brakeman was riding one corner of the leading car and the conductor in training was riding the opposite side of the car. All warning devices were in operation when a van struck the leading end of the car knocking the brakeman off the car and under the leading wheels.

Special Switching Hazard(s):	**Struck by Motor Vehicle**
Possible Contributing Factor:	Highway user inattentiveness
External Circumstances:	Employee physical condition, other
Day of Week:	Saturday
Time of Fatal Event:	9:45 AM
Time on Duty (hours: minutes):	3:54
Temperature (Fahrenheit):	45
Direction of Movement:	shoved
Crew's Next Move:	switch plant
Death Result of Train Movement?	yes
Other Movements Nearby?	no
Track Type:	main/industrial
Hit by Own Equipment?	yes
Striking Train Within Rules?	yes
Speed of Equipment (mph):	3
Deceased Regular Job?	yes
Had Deceased Worked There Before?	yes
Crew Size:	4
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

December Switching Fatalities

Note: The Switching Fatality narrative summaries are taken from *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. All other information is from the SOFA Matrix, the SOFA Working Group's electronic database.

No. 15 of 17: December 24, 2001 – NS – Lynchburg, VA

A conductor, engineer and conductor in training had been transported to an unattended train standing on a siding a portion of which was in a tunnel adjacent to the main track. After storing their equipment, the conductor and the conductor in training left the locomotive to release hand brakes on the train. The conductor was killed when she failed to step in between two boxcars of her train as the conductor in training had done and was subsequently struck by a passing mainline train.

Special Switching Hazard(s):	**Close Clearance and Struck by Mainline Tra**ins
Possible Contributing Factor:	Employee on or fouling track
Possible Contributing Factor:	Other train operation/human factors
Possible Contributing Factor:	Other train operation/human factors
Possible Contributing Factor:	Close or no clearance
Possible Contributing Factor:	Employee physical condition, other
Day of Week:	Monday
Time of Fatal Event:	3:43 AM
Time on Duty (hours: minutes):	4:15
Temperature (Fahrenheit):	35
Direction of Movement:	pulled
Crew's Next Move:	brake test
Death Result of Train Movement?	yes
Other Movements Nearby?	no
Track Type:	main
Hit by Own Equipment?	no
Striking Train Within Rules?	yes
Speed of Equipment (mph):	38
Deceased Regular Job?	no
Crew Size:	3
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

December Switching Fatalities

Note: The Switching Fatality narrative summaries are taken from *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. All other information is from the SOFA Matrix, the SOFA Working Group's electronic database.

No. 16 of 17: December 07, 2003 – UP – San Antonio, TX

A pitch/catch remote control operation was being run by a single operator who was struck and killed during a yard operation by his own locomotive. He stepped in front of its movement as he was headed for the other end of a crossover switch that he intended to line for the route he intended his engine to use.

Special Switching Hazard(s):	**Unexp. Movement of Railcars**
Possible Contributing Factor:	Employee on or fouling track
Possible Contributing Factor:	Switch improperly lined
Possible Contributing Factor:	T307
Possible Contributing Factor:	Other miscellaneous causes
External Circumstances:	Quit offered
Day of Week:	Sunday
Time of Fatal Event:	12:12 AM
Time on Duty (hours: minutes):	1:12
Temperature (Fahrenheit):	39
Direction of Movement:	pulled
Crew's Next Move:	line switch
Death Result of Train Movement?	yes
Other Movements Nearby?	no
Track Type:	yard
Hit by Own Equipment?	yes
Striking Train Within Rules?	no
Speed of Equipment (mph):	12.65
Deceased Regular Job?	yes
Crew Size:	1
Drugs Present?	yes
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

December Switching Fatalities

Note: The Switching Fatality narrative summaries are taken from *Findings and Recommendations of the SOFA Working Group: August 2004 Update*. All other information is from the SOFA Matrix, the SOFA Working Group's electronic database.

No. 17 of 17: December 17, 2004 – BNSF – Radium, CO

(*Information preliminary pending review by SOFA Working Group*.)

Conductor, with 25 years of service, was struck by a passing train he was trying to observe.

Summarizing Upcoming Period of Risk

- **There is always risk to employees engaged in switching operations. On average, 10.5 Switching Fatalities occur each year. There have been 9 Fatalities already in 2005. On average, 131.3 SOFA-defined Severe Injuries occur each year. Through August 2005, there have been 76 Severe Injuries, the lowest, 8-month total at least since 1997, the first year these Injuries are database definable.**

- **The upcoming months of December and January are particularly risky. Twenty-four percent of 144 Switching Fatalities since 1992 occurred in these two Winter months. Twenty-one percent of Severe Injuries since 1997 have occurred in December and January.**

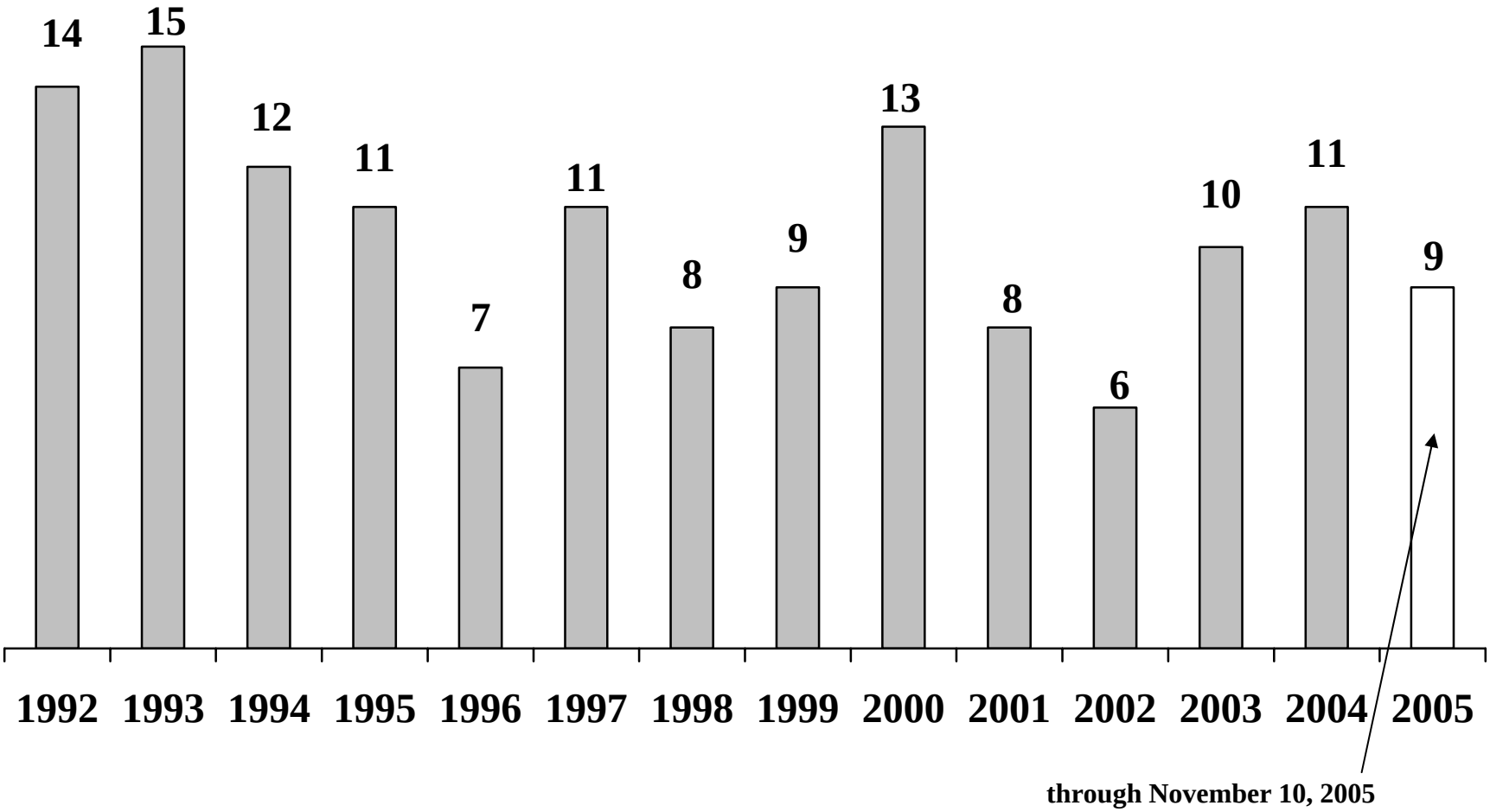
- **All but two of the 20 Switching Fatalities occurring since January 2004 involve Special Switching Hazards. 11 of 17 December Switching Fatalities involved Special Switching Hazards. While continued emphasis on the Five SOFA Operating Recommendations will reduce Switching Fatalities, to achieve the Zero Switching Fatality Goal emphasis is all needed on avoiding Special Switching Hazards.**

- **The SOFA Working Group has not identified the possible reasons for the increased risk of Switching Fatalities and Severe Injuries in December and January. However, it believes the risk can be reduced by:**

Applying SOFA Operating Recommendations – Recognizing Special Switching Hazards

144 Switching Fatalities Since 1992

The Switching Operations Fatality Analysis (SOFA) Group reviews each Switching Fatality after the Federal Railroad Administration completes its investigation. There have been 144 Fatalities since 1992. There were 11 Fatalities in 2004. Nine Fatalities have occurred in 2005 through October 18. The last Fatality occurred on August 15.



10.5 Switching Fatalities occur each year on average

9 Switching Fatalities in 2005. Most recent August 15.

Information on 2005 Switching Fatalities is preliminary pending formal investigation.

1. **JAN 10 at Buena Vista, AR**… A 53-year-old, Union Pacific (UP) conductor was struck and killed by lite engines that were running down the main track to the head end of his train, which was standing on the siding, to deliver a locomotive unit.

2. **JAN 26 at Los Angeles, CA** … A 52-year-old, Pacific Harbor Lines (PHL) conductor was struck and killed by his own cut of cars when he lined switches, thought the cars were going to one track, turned his back, and the cars came down the track he was fouling.

3. **APR 06 at Selma, AL** …A Norfolk Southern (NS) brakeman, part of a road crew, was assisting in and working with the local yard assignment in putting his train away. During a shove move, the brakeman was struck and killed by the leading end of a cut of cars the local yard assignment was moving.

4. **APR 11 at Ogden, UT**…An Union Pacific (UP) switchman was riding on a car that was located at other than the leading end of a shove move and giving radio commands to the RCL operator who was controlling the locomotive being used to shove the cars into a track. Radio communication ceased, the move stopped and the switchman was found dead adjacent to the track being shoved.

5. **MAY 13 at Detroit, MI**… A 24-year-old, Delray Connecting Railroad (DCRR) conductor died of injuries sustained when the car he was riding derailed. He was crushed between the car and a cement abutment.

6. **JUL 5 at Emporia, KS**…A 26-year-old, Burlington Northern Santa Fe (BNSF) trainman, with six months experience, was crushed when the car he was riding during a shove move impacted a standing cut of cars.

7. **JUL 18 at Memphis, TN**…An Union Pacific (UP) conductor died when the car he was riding on the point of a shove move was struck at a private crossing by a semi-tractor trailer truck at an industrial location.

8. **JUL 22 at Ragland, AL**…An Alabama & Tennessee Railway Company conductor died when crushed against a wall when the car he was riding on the point of a shove move was derailed.

9. **AUG 15 at Rogers, AR**…An Arkansas & Missouri Railroad Company (AM) brakeman was directing a car to a spot within a plant when he was crushed to death between the car and a close clearance structure.

Apply SOFA Operating Recommendations – Recognize Special Switching Hazards

SOFA-defined Severe Injuries [1]

Injuries

	1997	1998	1999	2000	2001	2002	2003	2004	2005
JAN	11	13	16	15	21	12	11	11	21
FEB	17	15	9	9	9	13	17	14	11
MAR	14	12	17	11	10	10	13	10	9
APR	8	10	6	10	12	6	9	13	10
MAY	6	12	8	8	12	14	9	6	4
JUN	9	10	8	11	8	5	10	9	7
JUL	9	14	10	8	10	7	6	10	5
AUG	13	10	11	14	8	10	7	14	9
YEAR-TO-DATE	**87**	**96**	**85**	**86**	**90**	**77**	**82**	**87**	**76**
SEP	10	11	15	10	20	12	5	4	
OCT	12	12	16	10	5	11	9	7	
NOV	12	9	12	11	13	14	10	10	
DEC	18	9	7	22	12	9	8	15	
totals	**139**	**137**	**135**	**139**	**140**	**123**	**114**	**123**	

Amputations [2]

1997	1998	1999	2000	2001	2002	2003	2004	2005
1	0	2	1	0	0	2	2	2
0	1	0	1	0	2	1	2	0
3	4	3	2	1	1	3	1	2
1	2	0	1	2	0	1	1	2
1	2	3	0	2	2	2	0	0
2	1	1	0	1	0	0	1	0
1	5	1	0	4	0	1	2	1
1	0	1	4	0	1	0	2	2
10	**15**	**11**	**9**	**10**	**6**	**10**	**11**	**9**
2	4	3	2	5	4	0	0	
2	5	2	2	0	0	2	2	
2	2	2	2	3	0	1	1	
4	1	0	4	1	1	2	1	
20	**27**	**18**	**19**	**19**	**11**	**15**	**15**	

January 1992 to August 2005

(August is latest month available)

[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.

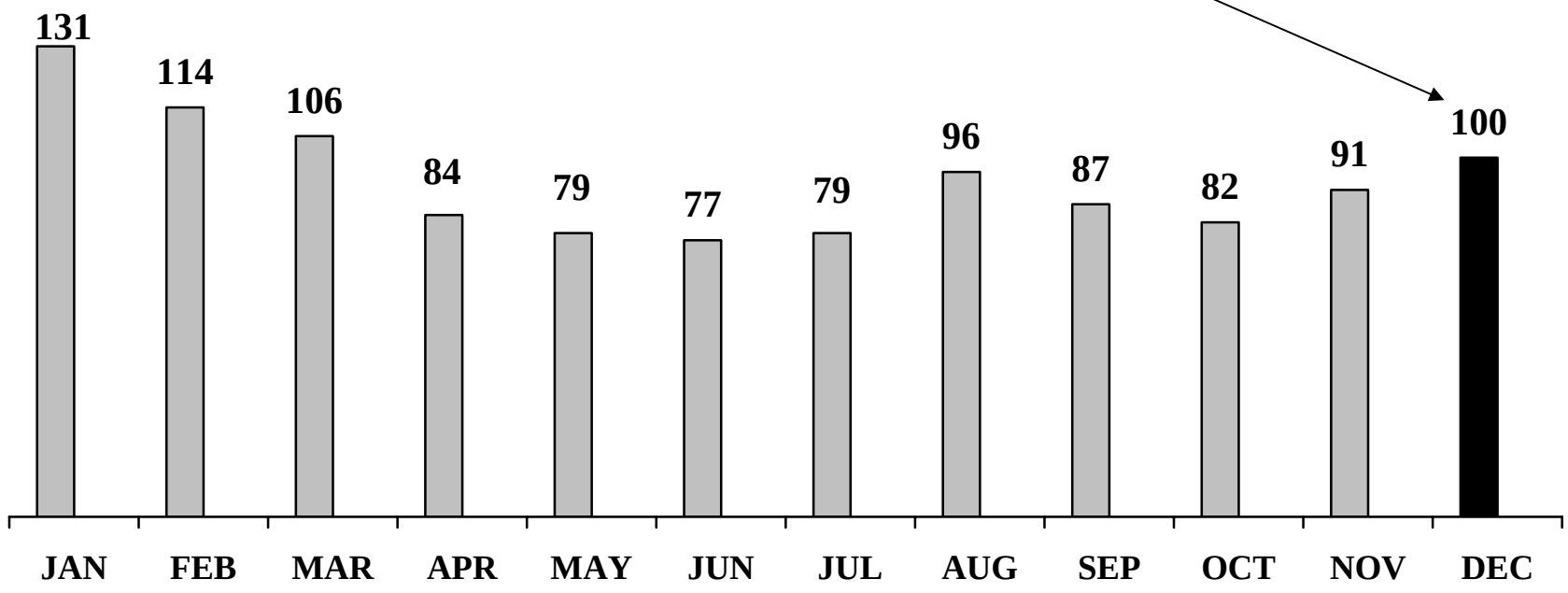
[2] Amputations are a type of SOFA-defined Severe Injury and are counted in 'Injuries'. Amputations are broken out separately because of the extreme nature of trauma to employees engaged in switching operations, and the potential for permanent occupational limitation.

100 SOFA-defined Severe Injuries (including amputations) in December since 1997

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 in on the FRA's website.

Please Note: While there is always risk to employees engaged in switching operations, December and January represent 20.5. percent of the 1,126 Severe Injuries occurring since January 1997.

(January to August represent 9 years of Severe Injuries. All other months are 8 years.)



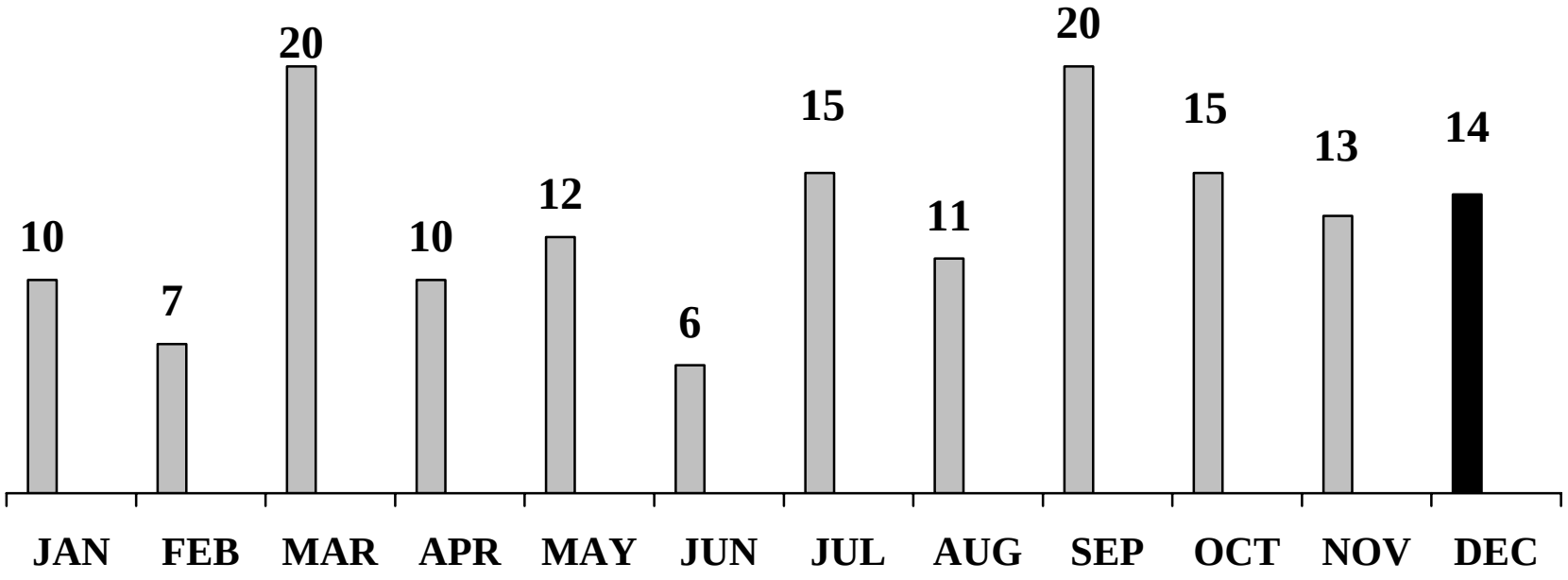
1,126 Severe Injuries occurred from January 1997 through July 2005

131.3 SOFA-defined Severe Injuries occur each year on average

14 Amputations (a type of Severe Injury) in December since 1997

- **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 likelihood of occupational limitations.**

(January to August represent 9 years of Severe Injuries. All other months are 8 years.)



153 Amputations occurred from January 1997 through August 2005

18.0 Amputations occur each year on average