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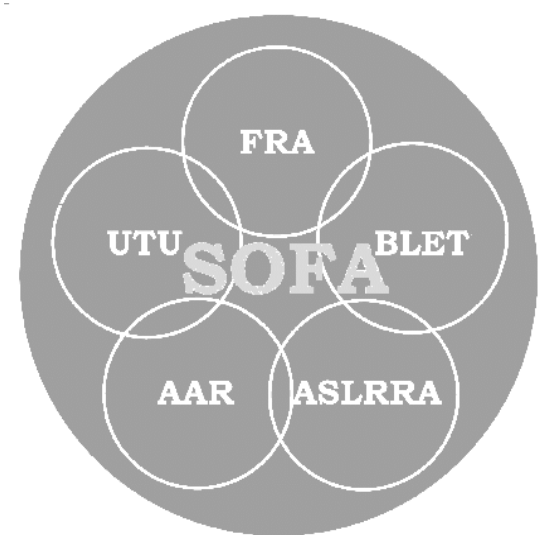
Make Switching Fatality Free:
Apply SOFA Operating Recommendations – Recognize Special Switching Hazards



February 2006 Switching Fatality and Severe Injury Update

The SOFA Working Group

Comprised of union, management, and government representatives, the SOFA Working Group is trying to *Make Switching Fatality Free* through education and monthly dissemination of information on how Fatalities occur – and how such events, averaging 10.4 per year, can be prevented.

Please feel free to use, reproduce, and circulate this information in your safety efforts.

February Switching Fatalities

Since 1992, 8 Switching Fatalities have occurred in February. Eight Fatalities also occurred in August and November. These three months are the lowest, while December and January are the highest with 18. Regardless of the number of Fatalities, each month has risks to employees engaged in switching.

February Severe Injuries

Since 1997, in contrast to Switching Fatalities, February with 114 has the second highest number of SOFA-defined Severe Injuries. The 130 Severe Injuries in January are the highest month. March with 106 Severe Injuries is the third highest. Adverse weather conditions may play a role in Severe Injuries, with slipping, tripping, and falling being more prevalent. The SOFA Working Group does not know all the causes of Severe Injuries.

Since 2002, Severe Injuries per year have declined: 138 per year on average (1997-2001) v. 120 per year on average (2002-2004). *Applying SOFA Operating Recommendations – Recognizing Special Switching Hazards* may help in reducing these Severe Injury events even further.

Switching Fatalities in 2005

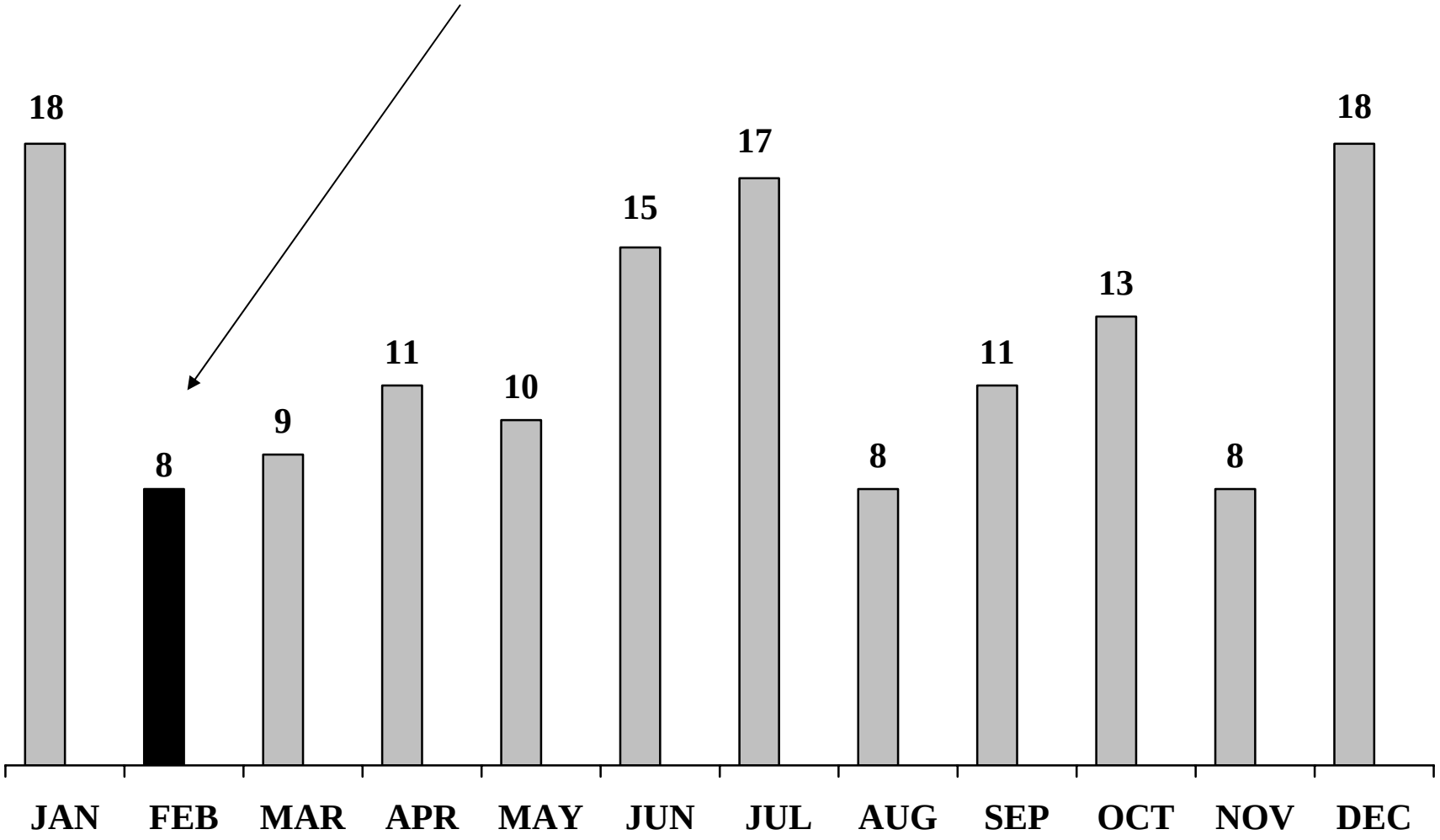
11 Switching Fatalities occurred in 2005. Switching Fatalities averaged 10.4 per year since 1992. The last Fatality, a brakeman, occurred on December 4, at Burlington, IA. There were 3 Switching Fatalities in July 2005.

2006 Outlook – *Making Switching Fatality Free*

Since the 8 Switching Fatalities in 2001, and the 6 in 2002 (the lowest number at least since 1992), the three years, 2002 through 2005, had 10, 11, and 11 Switching Fatalities respectively. There has been a shift in proportion among the two general reasons the SOFA Working Group has identified as causing these unfortunate events: Operating Recommendations and Special Switching Hazards. Most Switching Fatalities now involve one or more Special Switching Hazards. There is always need to *Apply SOFA Operating Recommendations*, but additional emphasis must be placed on *Recognizing Special Switching Hazards*.

8 of 146 (5.5%) Switching Fatalities since 1992 Occurred in February

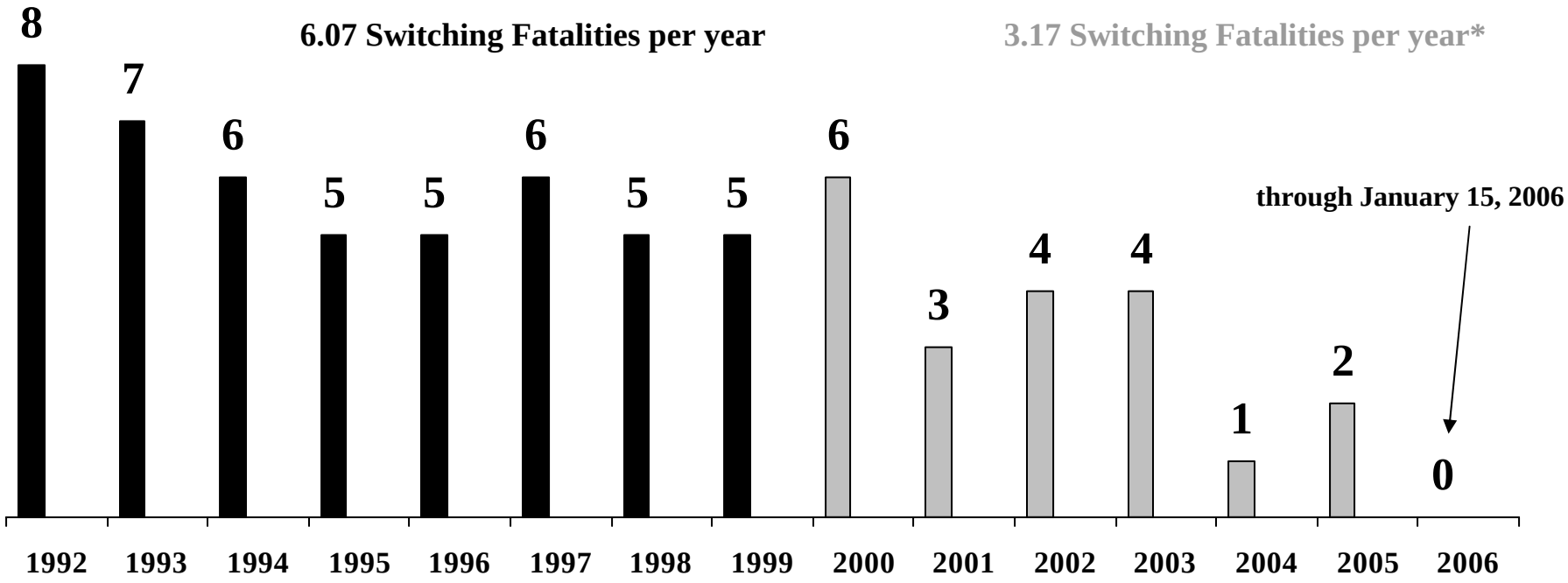
There is always risk to employees engaged in switching.



Applying SOFA Operating Recommendations is having an effect

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. Expressed as a rate, there were 6.07 Switching Fatalities per year related to Operating Recommendations.

There were 20 Switching Fatalities related to the Five Operating Recommendations in the post-SOFA Report period, October 1, 1999 through January 15, 2006 – 6.30 years. Expressed as a rate, there were 3.17 Switching Fatalities per year* related to Operating Recommendations.



* The Switching Fatality at Burlington, IA, on December 4, 2005, is believed to involve a Close Clearance Special Switching Hazard. If further review by the SOFA Working Group determines one or more Operating Recommendations were involved, the Switching Fatality rate after the release of the *SOFA Report* would increase from 3.17 to 3.33.

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

Recognizing Special Switching Hazards Needs Emphasis

Now the majority of Switching Fatalities involve Special Switching Hazards. The SOFA Working Group (SWG) believes the industry's emphasis on *Applying SOFA Operating Recommendations* has had a positive effect – as will continued emphasis. But to *Make Switching Fatality Free*, additional emphasis is needed in *Recognizing Special Switching Hazards*.

"In addition to the Five Operating Recommendations, the SWG wants to make those engaged in switching 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.

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

8 February Switching Fatalities

#	Date	RR	Location	Age	Service (yrs)	Employee's Job	Employee Act	Employee Location	Fatal Event	SOFA Recommendations	Special Switching Hazard
1	02/17/95	CR	St. James, OH	48	29	road conductor	walking	near on-track equip-on ground	struck by on-track equipment	**3, 4**	
2	02/24/95	ATSF	Amarillo, TX	44	19	yard conductor	installing	on track	struck by on-track equipment	**1, 2**	
3	02/02/97	CR	Burns Harbor, IN	54	27	yard conductor	standing	beside track	struck by on-track equipment	**2**	
4	02/04/98	BRC	Bedford Park, IL	42	23	yard conductor	standing	between tracks	sudden/unexpected movement of on-track equipment	**2**	
5	02/17/99	KCS	Kansas City, MO	26	7	yard conductor	walking	beside track	struck by object		**Struck by Motor Vehicle**
6	02/11/03	CNIC	Flat Rock, MI	57	31	yard brakeman	walking	on track	struck by on-track equipment	**2**	
7	02/16/03	CSXT	Syracuse, NY	36	2.5	yard brakeman	walking	on track	struck by on-track equipment		**Free-Rolling Railcars**
8	02/18/03	CSXT	Cheektowaga, NY	51	29	road conductor	handbrakes, releasing	on end of car	sudden/unexpected movement of on-track equipment		**Unsecured Cars**

Make Switching Fatality Free:
Apply SOFA Operating Recommendations – Recognize Special Switching Hazards

February 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 8: February 17, 1995 – CR – St. James, OH

Arbitrary change in switching operations by conductor resulted in him being unexpectedly struck and fatally injured by approaching cars while he was fouling the track.

SOFA Operating Recommendation(s):	**3, 4**
Possible Contributing Factor:	Switch improperly lined
Possible Contributing Factor:	Employee on or fouling track
Possible Contributing Factor:	Radio communication, improper
Day of Week:	Friday
Time of Fatal Event:	11:15 AM
Time on Duty (hours: minutes):	4:45
Temperature (Fahrenheit):	39
Direction of Movement:	shoved
Crew's Next Move:	cut cars
Death Result of Train Movement?	yes
Track Type:	industrial/spot/load-unload/stub track
Hit by Own Equipment?	yes
Striking Train Within Rules?	no
Speed of Equipment (mph):	2
Deceased Regular Job?	yes
Crew Size:	3
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

February 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 18: February 24, 1995 – ATSF – Amarillo, TX

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

SOFA Operating Recommendation(s):	**1, 2**
Possible Contributing Factor:	Instructions to train/yard crew improper
Day of Week:	Friday
Time of Fatal Event:	9:45 AM
Time on Duty (hours: minutes):	2:15
Temperature (Fahrenheit):	48
Direction of Movement:	free-running
Death Result of Train Movement?	yes
Other Movements Nearby?	yes
Track Type:	yard/flat/rec/dept
Hit by Own Equipment?	no
Striking Train Within Rules?	yes
Speed of Equipment (mph):	6
Deceased Regular Job?	yes
Crew Size:	4
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

February 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 18: February 02, 1997 – CR – Burns Harbor, IN

Two yard jobs working on adjacent tracks. The conductor of one is studying his switch list as the other job is shoving into the adjacent track. Conductor is struck and killed by the lead car of the adjacent track shove move.

SOFA Operating Recommendation(s):	**2**
Possible Contributing Factor:	Shoving movement, absence of a man on or at leading end of movement
Day of Week:	Sunday
Time of Fatal Event:	9:55 PM
Temperature (Fahrenheit):	30
Direction of Movement:	shoved
Crew's Next Move:	begin switching
Death Result of Train Movement?	yes
Other Movements Nearby?	yes
Track Type:	yard/flat/classification
Hit by Own Equipment?	no
Striking Train Within Rules?	no
Speed of Equipment (mph):	11
Crew Size:	3
Drugs Present?	no
Drugs a Factor?	no

February 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 18: February 04, 1998 – BRC – Bedford Park, IL

Conductor and switchman making hoses on track 12, last transmission by conductor is "I think I got all the hoses after that next one…." Conductor later found to have been struck and killed by a free rolling car on the adjacent track.

SOFA Operating Recommendation(s):	**2**
Possible Contributing Factor:	Employee on or fouling track
Possible Contributing Factor:	Close or no clearance
External Circumstances:	Track centerline at 13 feet
Day of Week:	Wednesday
Time of Fatal Event:	5:33 PM
Time on Duty (hours: minutes):	3:03
Temperature (Fahrenheit):	35
Direction of Movement:	free-running
Crew's Next Move:	couple track
Death Result of Train Movement?	no
Other Movements Nearby?	yes
Track Type:	yard/hump/classification
Hit by Own Equipment?	no
Striking Train Within Rules?	yes
Speed of Equipment (mph):	1
Deceased Regular Job?	yes
Crew Size:	3
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

February 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 18: February 17, 1999 – KCS – Kansas City, MO

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

Special Switching Hazard(s):	**Struck by Motor Vehicle**
Possible Contributing Factor:	Interference (other the vandalism) with railroad operations by non-railroad employee
External Circumstances:	Poor lighting
Day of Week:	Wednesday
Time of Fatal Event:	7:05 PM
Time on Duty (hours: minutes):	4:05
Temperature (Fahrenheit):	42
Crew's Next Move:	Cut off power
Death Result of Train Movement?	no
Track Type:	yard/flat/industrial
Hit by Own Equipment?	no
Striking Train Within Rules?	no
Speed of Equipment (mph):	0
Crew Size:	3
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

February 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 18: February 11, 2003 – CNIC – Flat Rock, MI

A three-person crew (engineer, conductor, brakeman) were stopped and the engineer and conductor were awaiting the brakeman's return from the "Trim Shanty". During this time, another crew was in the process of shoving a cut of cars down a track that was located between where the brakeman's crew were waiting and the Shanty. The brakeman exited the Shanty and was struck by the shove move as he crossed the tracks to get to his crew. The shove move was being preceded by two of the striking train's crew who were riding in a van at the time.

SOFA Operating Recommendation(s):	**2**
Possible Contributing Factor:	Employee on or fouling track
Possible Contributing Factor:	Shoving movement, absence of a man on or at leading end of movement
Possible Contributing Factor:	Other general switching rules
Possible Contributing Factor:	Poor crew utilization
External Circumstances:	Shove protected from within moving taxi rather than from the actual leading point of movement because of cool weather
Day of Week:	Tuesday
Time of Fatal Event:	4:55 PM
Time on Duty (hours: minutes):	1:30
Temperature (Fahrenheit):	21
Direction of Movement:	shoved
Crew's Next Move:	stop train
Death Result of Train Movement?	yes
Other Movements Nearby?	yes
Track Type:	yard/lead
Hit by Own Equipment?	no
Speed of Equipment (mph):	8
Deceased Regular Job?	yes
Crew Size:	3
Drugs Present?	no
Drugs a Factor?	no

February 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 18: February 16, 2003 – CSX – Syracuse, NY

A two-person crew was flat switching in a yard when the switchman, needed a break. He mentioned it to the yard foreman and they decided to go to break after one last car was "kicked" into a specific track. A short time after the car had been released, the foreman's operating control unit indicated a "no poll" failure and the locomotive shut down. When the foreman couldn't contact the switchman he went looking for him. The brakeman was found struck and killed by the last car that had been "kicked".

Special Switching Hazard(s):	**Free-Rolling Railcars**
Possible Contributing Factor:	Employee on or fouling track
Possible Contributing Factor:	Other extreme environmental condition
Possible Contributing Factor:	Employee physical condition, other
External Circumstances:	Slipped, tripped or fell due to climatic conditions - snow and ice
Day of Week:	Sunday
Time of Fatal Event:	12:24 AM
Time on Duty (hours: minutes):	1:24
Temperature (Fahrenheit):	-15
Direction of Movement:	shoved/free-running
Crew's Next Move:	switch cars
Death Result of Train Movement?	yes
Other Movements Nearby?	no
Track Type:	yard/lead
Hit by Own Equipment?	yes
Striking Train Within Rules?	yes
Speed of Equipment (mph):	8
Deceased Regular Job?	no
Had Deceased Worked There Before?	yes
Crew Size:	2
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

February 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.

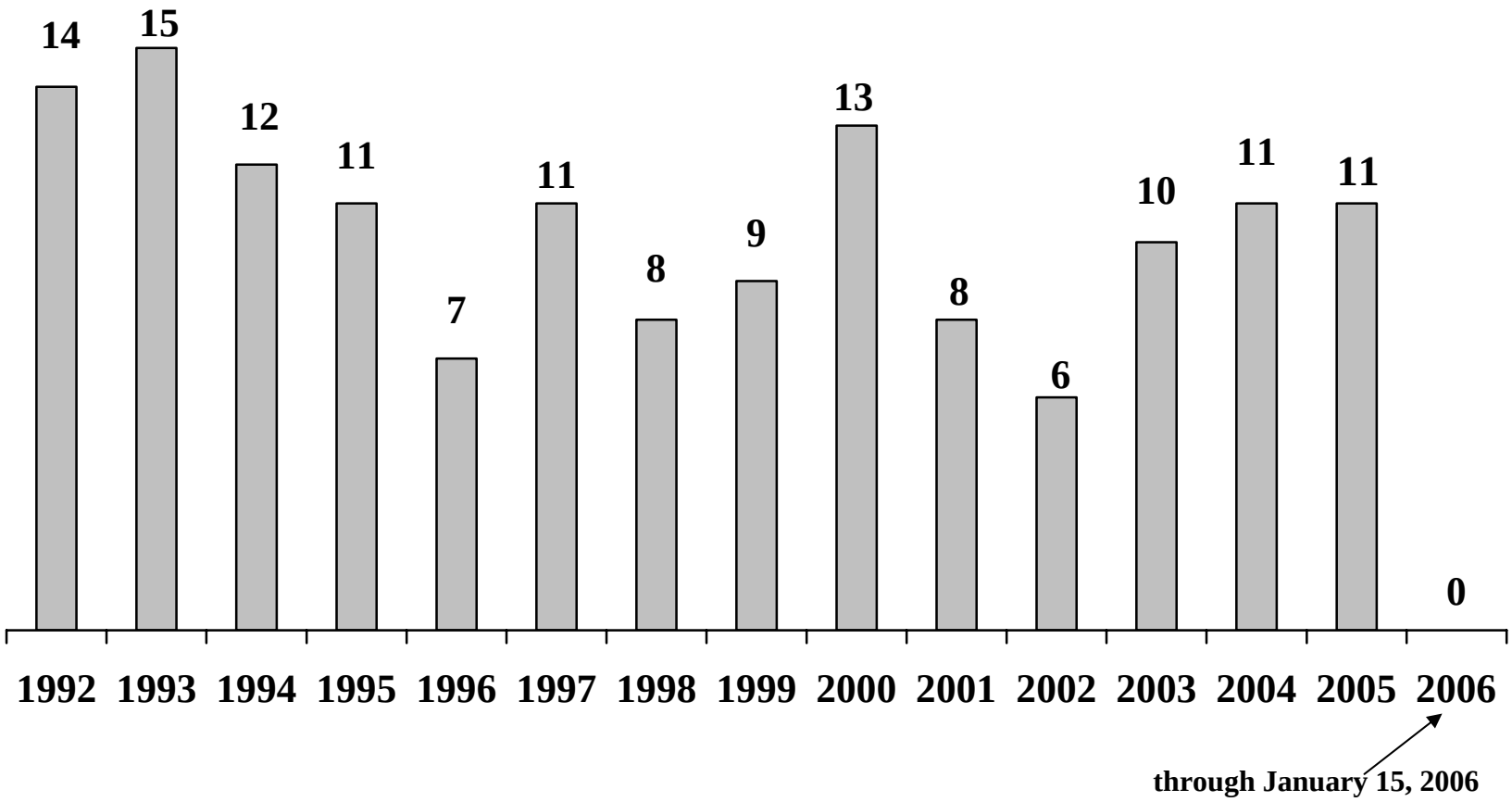
No. 8 of 18: February 18, 2003 – CSX – Cheektowaga, NY

A three-person switching crew was in the process of shoving cars into a track at an industry. The switch foreman was riding the leading end of the shove and directing the move when he was struck by the cut of cars that they had left on another track and which had rolled out and into his shove move.

Special Switching Hazard(s):	**Unsecured Cars**
Possible Contributing Factor:	Failure to properly secure hand brake on car(s) railroad employee
Possible Contributing Factor:	Failure to couple
Possible Contributing Factor:	Passed couplers
Day of Week:	Tuesday
Time of Fatal Event:	12:45 PM
Time on Duty (hours: minutes):	5:54
Temperature (Fahrenheit):	18
Direction of Movement:	shoved/free-running
Crew's Next Move:	spot
Death Result of Train Movement?	yes
Other Movements Nearby?	no
Track Type:	lead/industrial
Hit by Own Equipment?	yes
Striking Train Within Rules?	yes
Speed of Equipment (mph):	1
Deceased Regular Job?	yes
Crew Size:	3
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

146 Switching Fatalities Since 1992

The SOFA Working Group reviews each Switching Fatality after the Federal Railroad Administration completes its investigation. There have been 146 Fatalities since 1992. In the last three years, 10, 11, and 11 Fatalities respectively have occurred.



10.4 Switching Fatalities occur each year on average

Review of 11 Switching Fatalities in 2005

(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.

10. **NOV 16 at Lugoff, SC**…A 47-year-old, CSX Transportation (CSX) conductor was killed during an industrial switching operation. The brakeman, who was uncoupling cars, requested more slack from the engineer, while the conductor was getting the numbers of cars previously switched. Shortly thereafter, the conductor was found crushed between the knuckles of those cars.

11. **DEC 4 at Burlington, IA**…A Burlington Northern Santa Fe (BNSF) brakeman, riding the side of a car into an area posted as "close clearance" was killed when he was crushed between the car he was riding and a steel walkway support beam.

SOFA-defined Severe Injuries

January 1992 to October 2005

	1997	1998	1999	2000	2001	2002	2003	2004	2005	average
JAN	11	13	16	15	21	12	11	11	20	14.4
FEB	17	15	9	9	9	13	17	14	11	12.7
MAR	14	12	17	11	10	10	13	10	9	11.8
APR	8	10	6	10	12	6	9	13	10	9.3
MAY	6	12	8	8	12	14	9	6	6	9.0
JUN	9	10	8	11	8	5	10	9	7	8.6
JUL	9	14	10	8	10	7	6	10	5	8.8
AUG	13	10	11	14	8	10	7	14	9	10.7
SEP	10	11	15	10	20	12	5	4	9	10.7
OCT	12	12	16	10	5	11	9	7	9	10.1
YEAR-TO-DATE	109	119	116	106	115	100	96	98	95	106.0
NOV	12	9	12	11	13	14	10	10		11.4
DEC	18	9	7	22	12	9	8	15		12.5
totals	139	137	135	139	140	123	114	123		131.3

138.0 Severe Injuries occurred on average per year from 1997 through 2001.

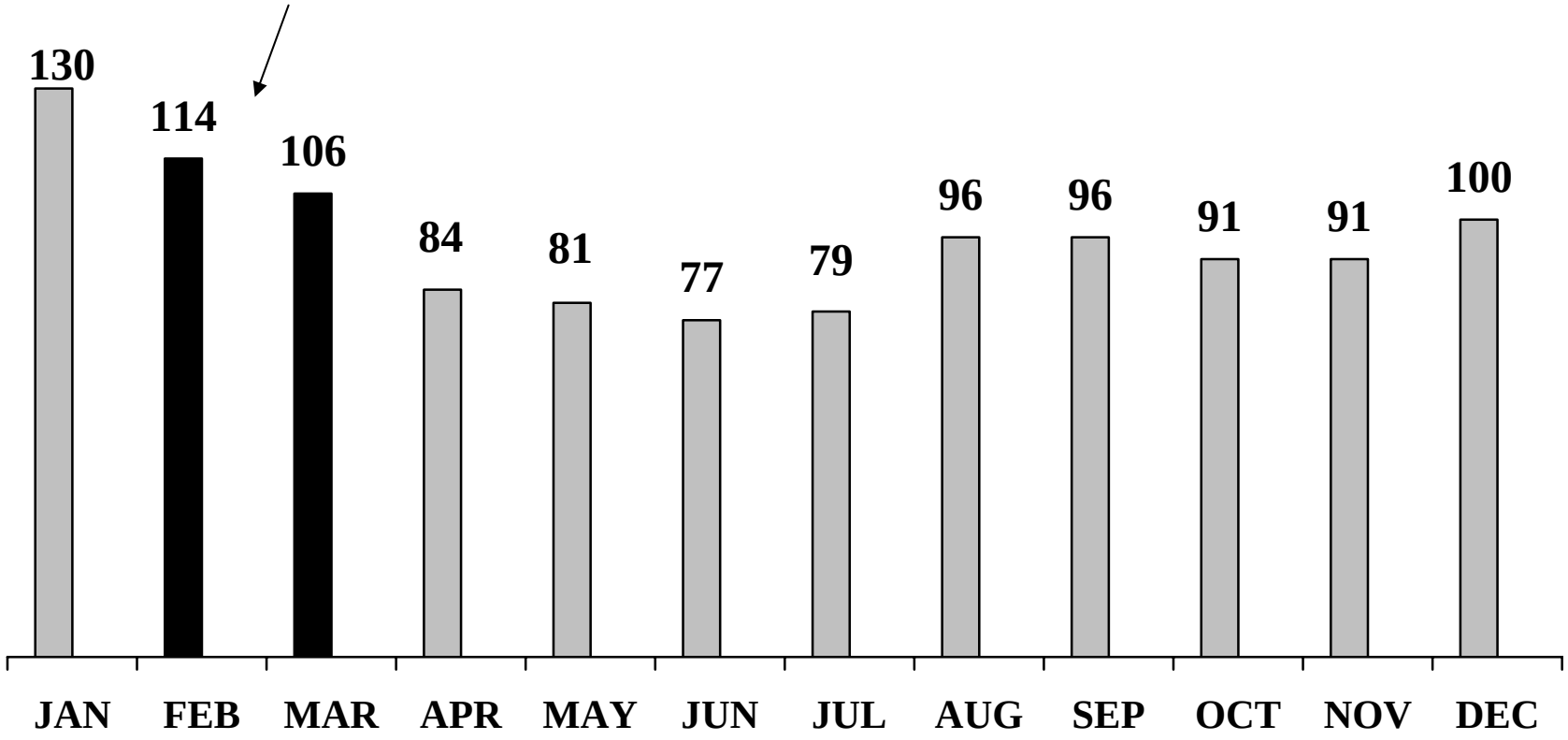
120.0 Severe Injuries occurred on average per year from 2002 through 2004.

Severe Injuries are 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. Available at: http://www.fra.dot.gov/us/content/102

114 SOFA-defined Severe Injuries (including amputations) in February since 1997

(January to October represents 9 years of Severe Injuries. All other months are 8 years.)

19.2 percent of Severe Injuries occurred in February and March



1,145 Severe Injuries occurred from January 1997 through October 2005

Amputations
A type of SOFA-defined Severe Injuries

Amputations are shown separately because of the <u>extreme trauma to employees</u> engaged in switching, and potential for permanent occupational limitations.

January 1992 to October 2005

	1997	1998	1999	2000	2001	2002	2003	2004	2005	average
JAN	1	0	2	1	0	0	2	2	2	1.1
FEB	0	1	0	1	0	2	1	2	0	0.8
MAR	3	4	3	2	1	1	3	1	2	2.2
APR	1	2	0	1	2	0	1	1	2	1.1
MAY	1	2	3	0	2	2	2	0	0	1.3
JUN	2	1	1	0	1	0	0	1	0	0.7
JUL	1	5	1	0	4	0	1	2	1	1.7
AUG	1	0	1	4	0	1	0	2	2	1.2
SEP	2	4	3	2	5	4	0	0	3	2.6
OCT	2	5	2	2	0	0	2	2	0	1.7
YEAR-TO-DATE	**14**	**24**	**16**	**13**	**15**	**10**	**12**	**13**	**12**	**14.3**
NOV	2	2	2	2	3	0	1	1		1.6
DEC	4	1	0	4	1	1	2	1		1.8
totals	**20**	**27**	**18**	**19**	**19**	**11**	**15**	**15**		**18.0**

20.6 Amputations occurred on average per year from 1997 through 2001.

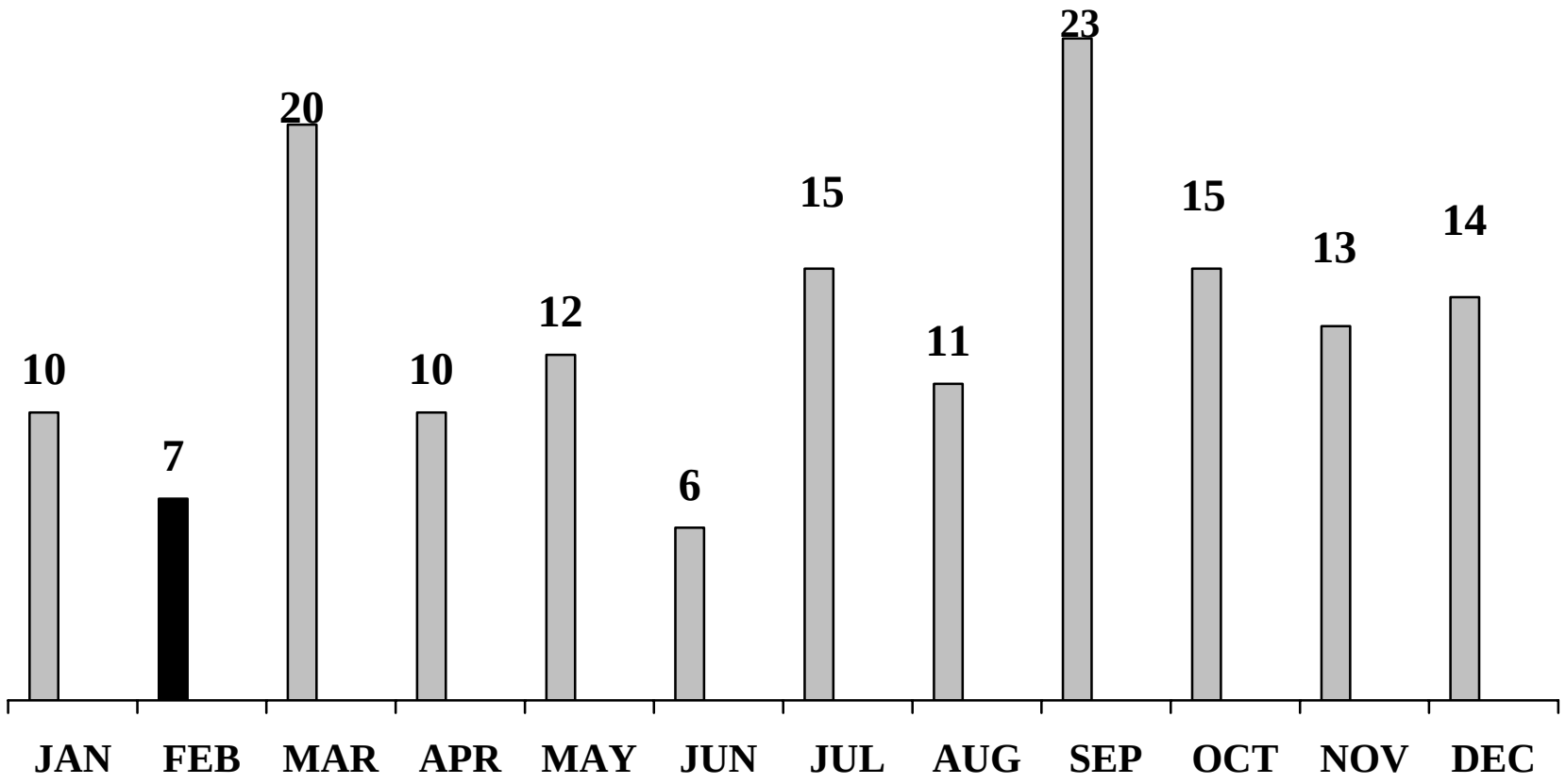
13.7 Amputations occurred on average per year from 2002 through 2004.

7 Amputations (a type of Severe Injury) in February 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, and the likelihood of occupational limitations.

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



156 amputations occurred from January 1997 through October 2005