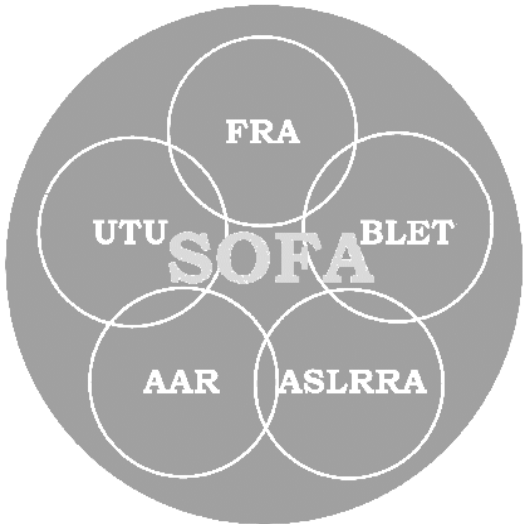
PLEASE POST IMMEDIATELY

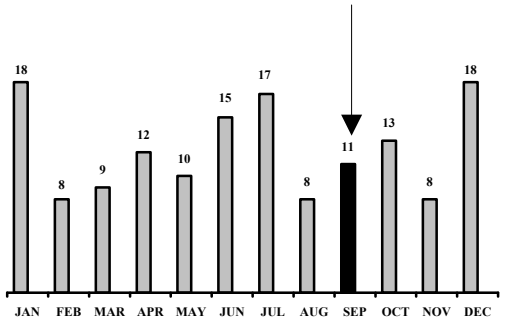
Make Switching Fatality Free:
Apply SOFA Operating Recommendations – Recognize Special Switching Hazards

In 2004 and 2005, there were 22 Switching Fatalities. 86 percent involved 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



Since 1992, 11 Switching Fatalities have occurred in September



Through August 07, one Switching Fatality in 2006:
April 2, at Palmer, MI

September 2006
Switching Fatality and Severe Injury Update

(Feel free to use, reproduce, and circulate this information in your safety efforts.)

Test Your Knowledge of Switching Fatalities

1) From 1992 to 2005, how many Switching Fatalities occurred on average each year?

a) **3.2 – and most years had no Switching Fatalities.**

b) **5.7 – and 3 of the 14 years had no Switching Fatalities.**

c) **8.6 – and the years 1992 through 1998 accounted for most Switching Fatalities.**

d) **10.4 – and all years had a least 6 Switching Fatalities. A Switching Fatality on average every 35 days.**

2) Reasons why Switching Fatalities occur?

a) **Cannot be understood. Switching Fatalities are random acts of nature.**

b) **Are partially understood.**

c) **Vary depending on the perspective of labor, management, or government.**

d) **Are well understood. Reasons were determined by consensus of labor, management, and government representatives.**

3) The Five SOFA Operating Recommendations should be applied in appropriate situations?

a) **If time permits.**

b) **Only during periods of increased risk: holidays, winter months, poor weather conditions, etc.**

c) **If crew has less than three years of total experience, or is unfamiliar with the territory.**

d) **Always. A switching operation omitting an appropriate Recommendation and resulting in a Fatality can never be redone.**

4) Recognizing Special Switching Hazards?

a) **Is not necessary. The Five SOFA Operating Recommendations will prevent all Switching Fatalities.**

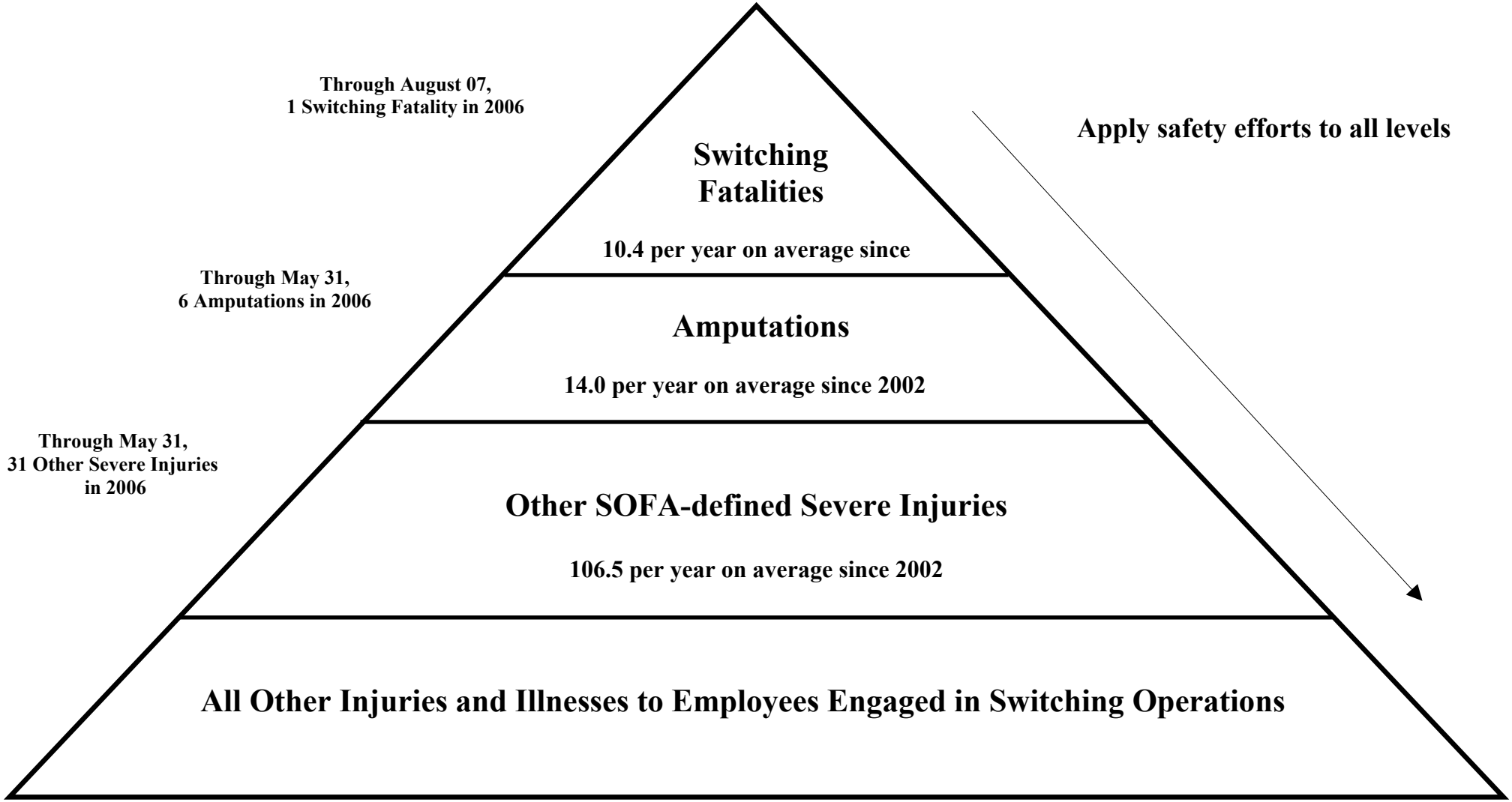
b) **Has little effect on the occurrence of Switching Fatalities.**

c) **Is helpful, but difficult and time consuming.**

d) **Is necessary if the Zero Switching Fatality Goal is to be achieved.** **(All answers are *d*)**

Switching Operations Casualty Pyramid

Engaged in switching operations, an activity critical to the modern economy, employees are exposed <u>daily</u> to risk of fatality, life-long disability, and injury and illness.



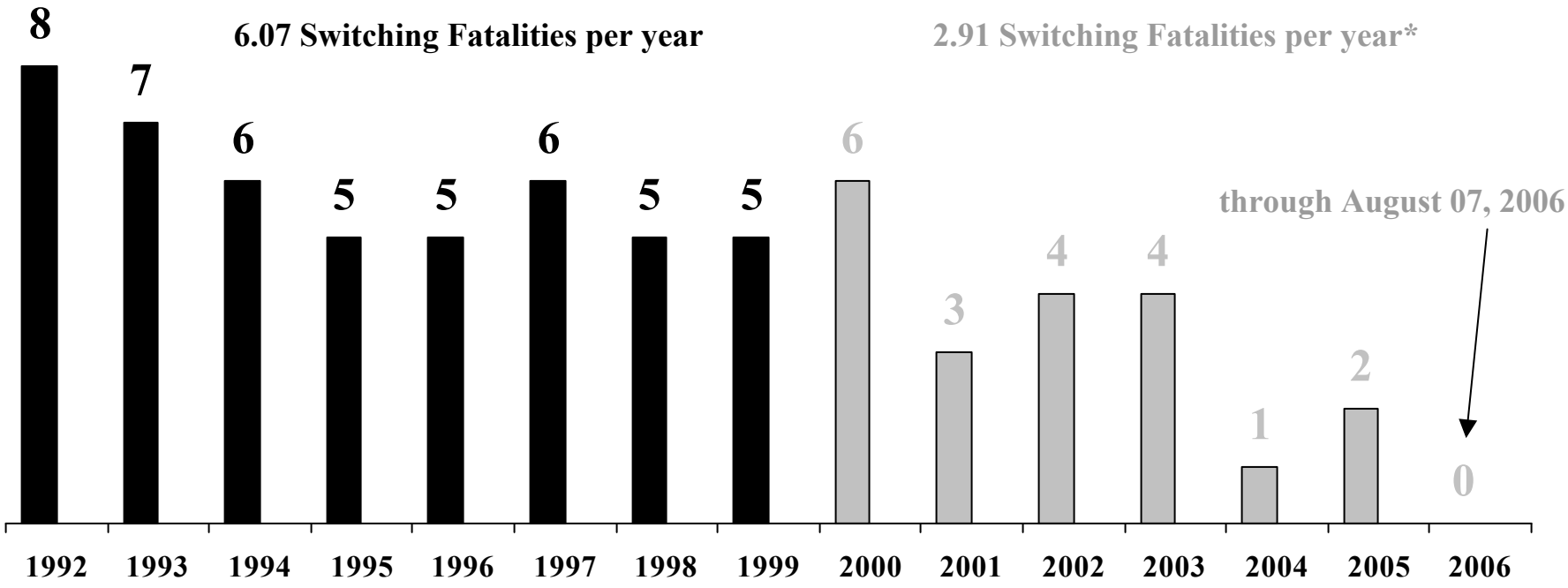
Reduction is a Step Towards Elimination

52 percent decline in yearly rate – 6.07 vs. 2.91 deaths per year

The original *SOFA Report*[1] was released in October 1999. Prior to the release, there were 47 Switching Fatalities related to the Five Operating Recommendations in the 7.75-year period January 1992 through September 1999. Expressed as a rate, there were 6.07 Switching Fatalities per year related to Operating Recommendations.

In the post-SOFA Report period of 6.88 years, October 1, 1999 through August 07, 2006, there were 20 Switching Fatalities related to the Five Operating Recommendations. Expressed as a rate, there were 2.91 Switching Fatalities per year* related to Operating Recommendations.

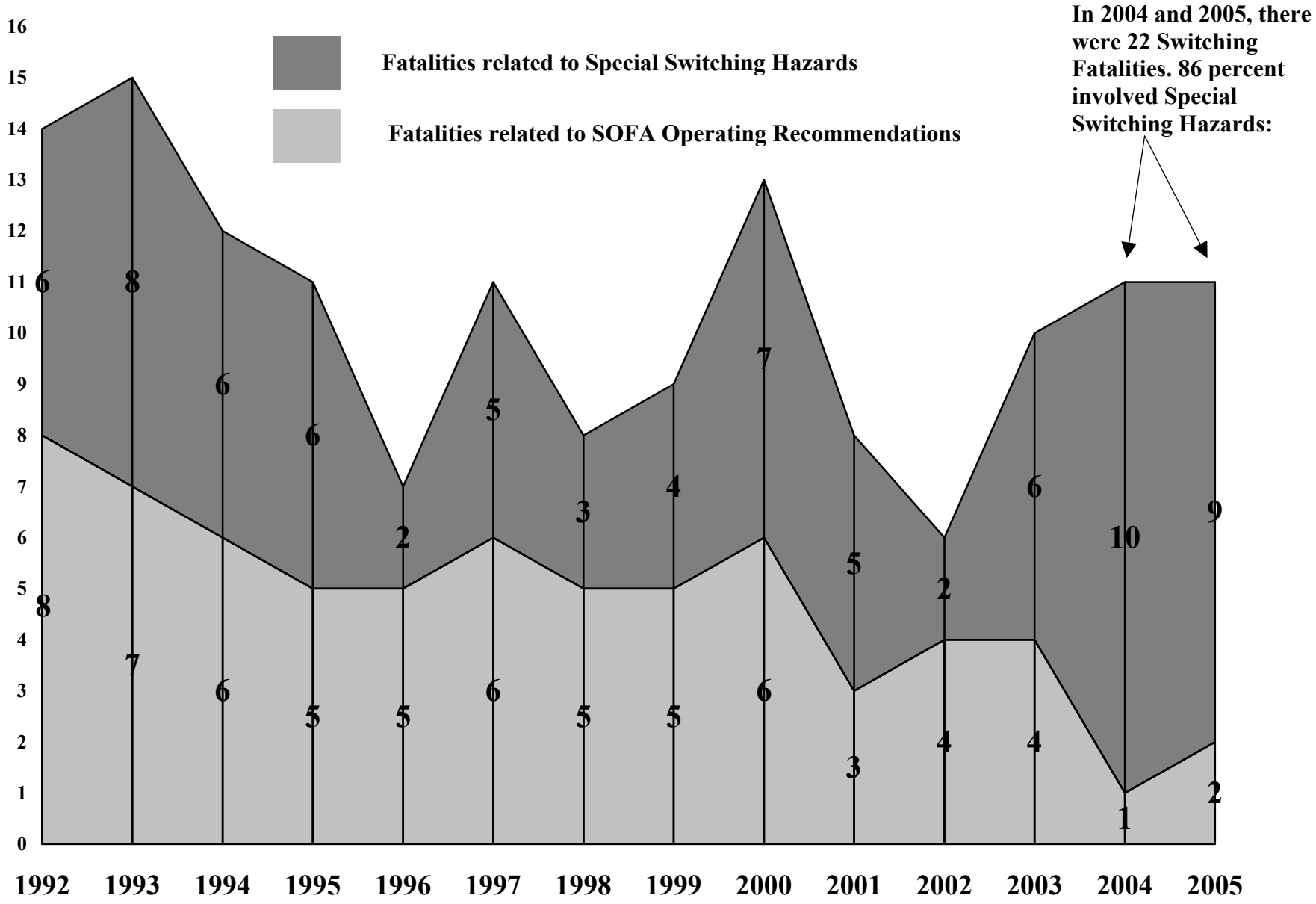
67 Switching Fatalities Related to SOFA Operating Recommendations



* 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 2.95 to 3.05.

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

Fatalities Related to SOFA Operating Recommendations and Special Switching Hazards 1992 to 2005



Recognize 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.

- 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
- Other Special Hazards or Events

* 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

SOFA-defined Severe Injuries

January 1992 to May 2006

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	totals	average
JAN	11	13	16	15	21	12	11	11	20	10	140	14.0
FEB	17	15	9	9	9	13	17	14	10	6	119	11.9
MAR	14	12	17	11	10	10	13	10	9	8	114	11.4
APR	8	10	6	10	12	6	9	13	10	6	90	9.0
MAY	6	12	8	8	12	14	9	6	6	7	88	8.8
To date	**50**	**50**	**48**	**45**	**52**	**41**	**50**	**48**	**49**	**37**		**47.0**
JUN	9	10	8	11	8	5	10	9	7		77	7.7
JUL	9	14	10	8	10	7	6	10	5		79	7.9
AUG	13	10	11	14	8	10	7	14	10		97	9.7
SEP	10	11	15	10	20	12	5	4	9		96	9.6
OCT	12	12	16	10	5	11	9	7	11		93	9.3
NOV	12	9	12	11	13	14	10	10	13		104	10.4
DEC	18	9	7	22	12	9	8	15	12		112	11.2
totals	**139**	**137**	**135**	**139**	**140**	**123**	**114**	**123**	**122**		**1,209**	

historically low

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

120.5 Severe Injuries occurred on average per year from 2002 through 2005

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

Amputations
A type of SOFA-defined Severe Injury

Amputations are shown separately because of the extreme trauma to employees engaged in switching, and the likelihood of permanent occupational and lifestyle limitations.

January 1992 to May 2006

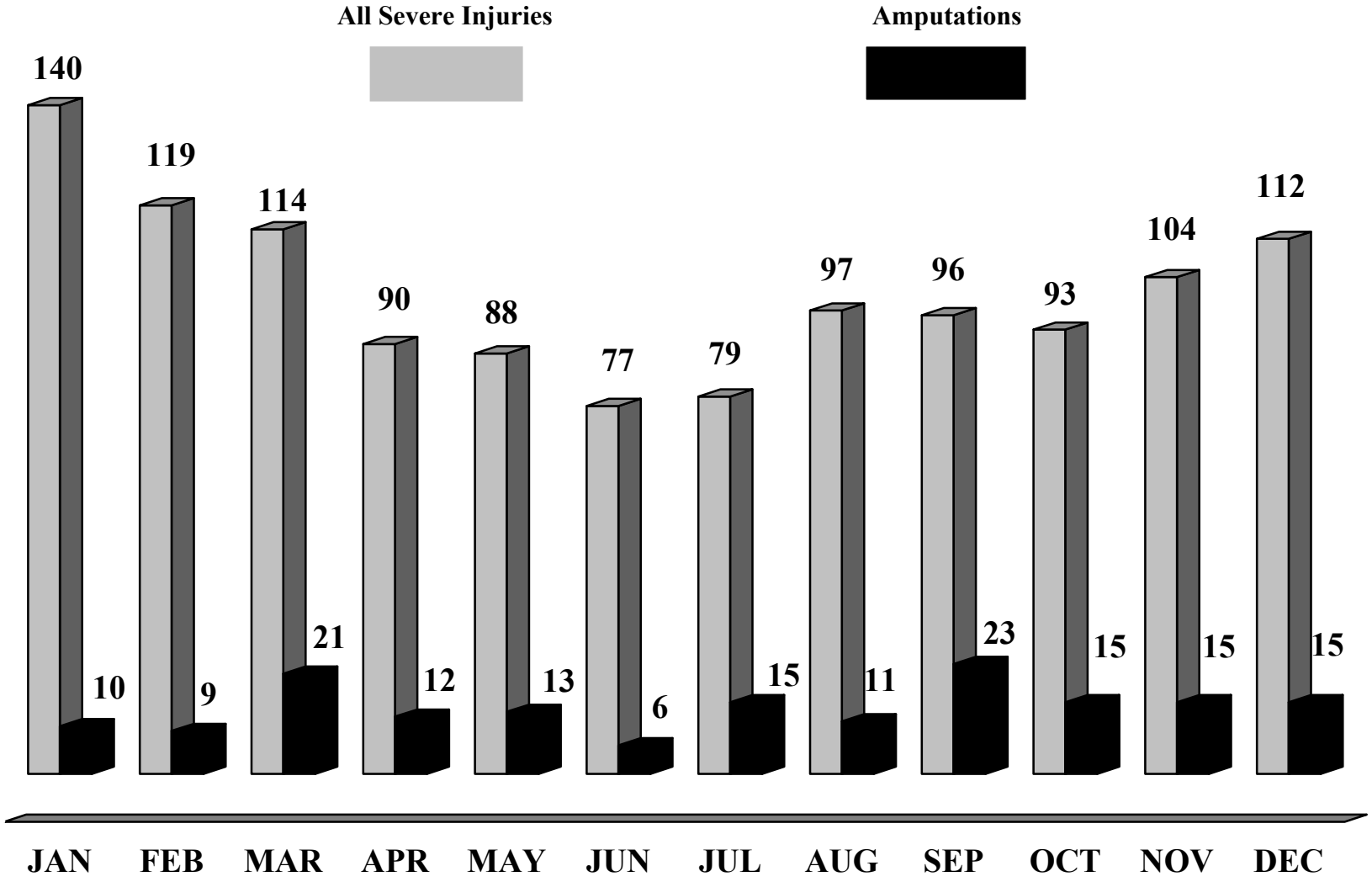
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	totals	average
JAN	1	0	2	1	0	0	2	2	2	0	10	1.0
FEB	0	1	0	1	0	2	1	2	0	2	9	0.9
MAR	3	4	3	2	1	1	3	1	2	1	21	2.1
APR	1	2	0	1	2	0	1	1	2	2	12	1.2
MAY	1	2	3	0	2	2	2	0	0	1	13	1.3
to date	**5**	**7**	**5**	**5**	**3**	**3**	**7**	**6**	**6**	**6**		**5.3**
JUN	2	1	1	0	1	0	0	1	0		6	0.6
JUL	1	5	1	0	4	0	1	2	1		15	1.5
AUG	1	0	1	4	0	1	0	2	2		11	1.1
SEP	2	4	3	2	5	4	0	0	3		23	2.3
OCT	2	5	2	2	0	0	2	2	0		15	1.5
NOV	2	2	2	2	3	0	1	1	2		15	1.5
DEC	4	1	0	4	1	1	2	1	1		15	1.5
totals	**20**	**27**	**18**	**19**	**19**	**11**	**15**	**15**	**15**		**165**	

20.6 Amputations occurred on average per year from 1997 through 2001

14.0 Amputations occurred on average per year from 2002 through 2005

Severe Injuries and Amputations by Month, January 1997 to May 2006

Amputations are a type of Severe Injury and are contained in the Severe Injury counts



11 September Switching Fatalities

#	Date	RR	Location	Age	Service (yrs)	Employee's Job	Employee Act	Employee Location	Fatal Event	SOFA Recommendations	Special Switching Hazard
1	09/02/93	ATSF	Carlsbad, NM	55	24	road conductor	crossing between	on track	struck by on-track equipment		**Miscellaneous**
2	09/20/94	ARR	Clear Site, AK	49	20	road brakemen	sitting	in car	derailments		**Struck by Motor Vehicle**
3	09/03/96	DGNO	Dallas, TX	43	.06*	road brakemen	standing	on end of car	ran into on-track equipment	**5**	
4	09/14/99	AM	Van Buren, AR	47	0.5	road conductor	adjusting coupler	between tracks	struck by on-track equipment	**1, 5**	
5	09/09/00	BNSF	Keokuk, IA	53	27	yard conductor	walking	on track	struck by on-track equipment	**4**	
6	09/02/02	CSXT	Madisonville, KY	52	24	road conductor	walking	on track	struck by on-track equipment		**Unexp. Movement of Railcars**
7	09/12/03	GC	Dublin, GA	45	0.2	road brakemen	walking	on track	struck by on-track equipment	**5**	
8	09/14/03	UP	Ogden, UT	53	26	yard conductor	handbrakes, releasing	on end of car	lost balance		**Equipment**
9	09/24/03	BNSF	Fresno, CA	35	2.3	yard conductor	riding	on side of car			**Miscellaneous**
10	09/02/04	BNSF	Clovis, NM	28	n/a	**To be reviewed by SOFA Working Group**					**Special Switching Hazard**
11	09/20/04	AA	Saline, MI	44	n/a	**To be reviewed by SOFA Working Group**					**Special Switching Hazard**

* Employee returned to work for three weeks after 10-year gap in service. Had 10 years and three weeks of total experience.

Apply SOFA Operating Recommendations – Recognize Special Switching Hazards

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 (a rate of one Fatality every 35 days), can be prevented.

September Switching Fatality

Note: The Switching Fatality narrative summary is 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 11: **September 02, 1993 – ATSF – Carlsbad, NM**

A three-person crew, accompanied by an engineer and a brakeman trainee, were trying, for the second time to make a coupling between two cars in a yard. The conductor was allowing the brakeman trainee to learn radio use and had just told him to tell the engineer to come back for another attempt at coupling. The brakeman turned toward the locomotives, relayed the conductor's instructions, looked back at the conductor and saw him impaled between the knuckles of the two cars.

Special Switching Hazard(s):	**Miscellaneous**
Possible Contributing Factor:	Employee on or fouling track
Possible Contributing Factor:	Failure to provide adequate space between equipment
Possible Contributing Factor:	Passed couplers
External Circumstances:	Too many students assigned to job
Day of Week:	Thursday
Time of Fatal Event:	12:30 PM
Time on Duty (hours: minutes):	2:00
Temperature (Fahrenheit):	88
Direction of Movement:	shoved
Crew's Next Move:	couple
Death Result of Train Movement?	yes
Track Type:	yard/flat/classification
Hit by Own Equipment?	yes
Striking Train Within Rules?	yes
Speed of Equipment (mph):	3
Crew Size:	5
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

September Switching Fatality

Note: The Switching Fatality narrative summary is 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 11: **September 20, 1994 – ARR – Clear Site, AK**

A three-person work train crew was shoving their train on the main line. The locomotive engineer was operating the locomotive and the brakeman and conductor were in the caboose. A tractor-trailer pulled over the crossing and was struck by the shove move, derailing the caboose and killing the brakeman.

Special Switching Hazard(s):	**Struck by Motor Vehicle**
Possible Contributing Factor:	Highway user inattentiveness
Possible Contributing Factor:	Highway user cited for violation of highway-rail grade crossing traffic laws
External Circumstances:	Highway user unawareness due to environmental factors (angle of sun, etc.)
Day of Week:	Tuesday
Time of Fatal Event:	7:19 PM
Time on Duty (hours: minutes):	11:19
Temperature (Fahrenheit):	50
Direction of Movement:	shoved
Crew's Next Move:	shove cars
Death Result of Train Movement?	yes
Other Movements Nearby?	no
Track Type:	main
Hit by Own Equipment?	no
Speed of Equipment (mph):	19
Deceased Regular Job?	no
Had Deceased Worked There Before?	yes
Crew Size:	3
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

September Switching Fatality

Note: The Switching Fatality narrative summary is 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 11: **September 03, 1996 – DGNO – Dallas, TX**

Yard switch crew, engineer, conductor and brakeman, while switching at an industry on a downhill grade experienced an unwanted run away car. While FE (brakeman) was in position on a car and setting a hand brake, the car started to roll away from the crew. FE continued to try to apply hand brake in an effort to stop the car. When discovering that the car was rolling away, the conductor attempted to slow and stop it by putting wood blocks under the wheels. The car accelerate to 30 to 35 mph. FE did not detrain before car collided with seven other cars at that speed. FE had three weeks experience.

SOFA Operating Recommendation(s):	**5**
Possible Contributing Factor:	Failure to properly secure hand brake on car(s)
Possible Contributing Factor:	Release lever would not set in the on position properly
Possible Contributing Factor:	Insufficient training
Day of Week:	Tuesday
Time of Fatal Event:	6:30 PM
Time on Duty (hours: minutes):	10:55
Temperature (Fahrenheit):	85
Direction of Movement:	free-running
Crew's Next Move:	spot cars
Death Result of Train Movement?	yes
Other Movements Nearby?	no
Track Type:	industrial/mainline
Hit by Own Equipment?	no
Striking Train Within Rules?	no
Speed of Equipment (mph):	25
Deceased Regular Job?	yes
Crew Size:	3
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

September Switching Fatality

Note: The Switching Fatality narrative summary is 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 11: September 14, 1999 – AM – Van Buren, AR

A two-person switching crew was in the process of shoving ten cars onto a clear track, with the intention of cutting three off, and pulling out the other seven out. The conductor counted down the cars via radio, and the engineer stopped one half-car lengths after the last radio transmission of one-half cars to go. Subsequently, the engineer discovered that the conductor had stepped in between the cars and had been coupled up.

SOFA Operating Recommendation(s):	**1, 5**
Possible Contributing Factor:	Employee on or fouling track
Possible Contributing Factor:	Impairment of efficiency or judgment because of drugs or alcohol
Day of Week:	Tuesday
Time of Fatal Event:	3:00 PM
Time on Duty (hours: minutes):	8:00
Temperature (Fahrenheit):	84
Direction of Movement:	shoved
Death Result of Train Movement?	yes
Other Movements Nearby?	no
Track Type:	yard/flat/industrial
Hit by Own Equipment?	yes
Crew Size:	2
Drugs Present?	yes
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

September Switching Fatality

Note: The Switching Fatality narrative summary is 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 11: **September 09, 2000 – BNSF – Keokuk, IA**

While shoving one car into an industry site, and using radio communication, the switch foreman was run over by the leading wheel as the shove move continued until coupling was made.

SOFA Operating Recommendation(s):	**4**
Possible Contributing Factor:	Close or no clearance
Possible Contributing Factor:	Employee on or fouling track
Possible Contributing Factor:	Radio communication, improper
External Circumstances:	Radio holster/suspenders may have been hooked by movement
Day of Week:	Saturday
Time of Fatal Event:	11:22 AM
Time on Duty (hours: minutes):	4:22
Temperature (Fahrenheit):	80
Direction of Movement:	shoved
Crew's Next Move:	pull car
Death Result of Train Movement?	yes
Other Movements Nearby?	no
Track Type:	yard/industrial/spot(load/unload)/outside
Hit by Own Equipment?	yes
Striking Train Within Rules?	no
Speed of Equipment (mph):	4
Deceased Regular Job?	yes
Crew Size:	3
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

September Switching Fatality

Note: The Switching Fatality narrative summary is 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 11: **September 02, 2002 – CSX – Madisonville, KY**

A two-person road crew stopped at a yard to make a set-off. The conductor made the cut on his train, instructed the engineer to haul ahead to clear the switches into the yard, lined the switches into what he thought was Track 4 and told the engineer to begin backing the set off into the yard. The conductor was struck and killed by the leading end of the shove move as it entered Track 3.

Special Switching Hazard(s):	**Unexpected Movement of Railcars**
Possible Contributing Factor:	Radio communication, failure to comply
Possible Contributing Factor:	Employee on or fouling track
Possible Contributing Factor:	Other general switching rules
Day of Week:	Monday
Time of Fatal Event:	4:05 AM
Time on Duty (hours: minutes):	5:35
Direction of Movement:	shoved
Death Result of Train Movement?	yes
Other Movements Nearby?	yes
Track Type:	yard/flat/classification
Hit by Own Equipment?	yes
Striking Train Within Rules?	no
Speed of Equipment (mph):	9
Deceased Regular Job?	yes
Crew Size:	2
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

September Switching Fatality

Note: The Switching Fatality narrative summary is 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 11: **September 12, 2003 – GC – Dublin, GA**

A two-person train crew was in the process of setting off and picking up cars in a small yard. The conductor, who had 8 weeks of experience, was killed when the leading car of the shove struck him as he stepped into its path.

SOFA Operating Recommendation(s):	**5**
Possible Contributing Factor:	Employee on or fouling track
Possible Contributing Factor:	Shoving movement, man on or at leading end of movement, failure to control
Possible Contributing Factor:	Insufficient training
Day of Week:	Friday
Time of Fatal Event:	10:45 AM
Time on Duty (hours: minutes):	4:45
Temperature (Fahrenheit):	78
Direction of Movement:	shoved
Crew's Next Move:	shove cars into track
Death Result of Train Movement?	yes
Other Movements Nearby?	no
Track Type:	yard/flat/lead
Hit by Own Equipment?	yes
Striking Train Within Rules?	yes
Speed of Equipment (mph):	1
Deceased Regular Job?	yes
Crew Size:	2
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

September Switching Fatality

Note: The Switching Fatality narrative summary is 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 11: **September 14, 2003 – UP – Ogden, UT**

A four-person yard switching crew had been working together and classifying cars into various tracks throughout the morning. The conductor was on the leading end of a two car free rolling cut of cars moving at 3 miles per hours when he fell from the leading end and was run over by the car he had been riding.

Special Switching Hazard(s):	**Equipment**
Possible Contributing Factor:	Employee falling from moving equipment
Possible Contributing Factor:	Other body defects (car) (requires a description)
Possible Contributing Factor:	Other body defects (car) (requires a description)
Day of Week:	Sunday
Time of Fatal Event:	1:15 PM
Time on Duty (hours: minutes):	6:15
Temperature (Fahrenheit):	69
Direction of Movement:	free-running
Crew's Next Move:	line switch
Death Result of Train Movement?	yes
Other Movements Nearby?	no
Track Type:	yard/lead/flat/lead/classification
Hit by Own Equipment?	yes
Striking Train Within Rules?	yes
Speed of Equipment (mph):	2
Deceased Regular Job?	yes
Crew Size:	4
Drugs Present?	no
Drugs a Factor?	no
Emergency Response Procedures Followed?	yes

September Switching Fatality

Note: The Switching Fatality narrative summary is 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 11: **September 24, 2003 – BNSF – Fresno, CA**

A three-person switching crew was shoving a cut of cars into a yard track and the switching foreman was riding the leading end of the 35 car cut. There was no air in the train line and the engineer was using engine brake to control the shove during the 50 car lengths of clear track to be shoved prior to making a coupling on other cars in the same track. Twenty cars into the move the foreman was either dislodged or fell from the leading end of the movement and was run over by the sixth head car of the shove.

Special Switching Hazard(s):	**Miscellaneous**
Day of Week:	Wednesday
Time of Fatal Event:	1:15 AM
Time on Duty (hours: minutes):	2:15
Temperature (Fahrenheit):	73
Direction of Movement:	shoved
Crew's Next Move:	couple
Death Result of Train Movement?	yes
Other Movements Nearby?	yes
Track Type:	yard/classification
Hit by Own Equipment?	yes
Speed of Equipment (mph):	5
Deceased Regular Job?	yes
Crew Size:	3
Emergency Response Procedures Followed?	yes

September Switching Fatality

No. 10 of 11: **September 02, 2005 – BNSF – Clovis, NM**
A 28-year old switchman was killed when the tank car he was riding derailed during a shove move near Clovis, NM.
(To be reviewed by SOFA Working Group)

September Switching Fatality

No. 11 of 11: **September 20, 2004 – AA – Saline, MI**
A 44-year old brakeman killed when crushed between track equipment and the car he was handling.
(To be reviewed by SOFA Working Group)

The Five Lifesavers (based on SOFA Operating Recommendations)

- Secure equipment before action is taken.
  (One September Switching Fatality involved this Lifesaver.)
- Protect employees against moving equipment.
- Discuss safety at the beginning of a job or when a project changes.
- Communicate before action is taken.
  (One September Switching Fatality involved this Lifesaver.)
- Mentor less experienced employees to perform service safely.
  (Three September Switching Fatalities involved this Lifesaver.)