

**Please Post Immediately**



- **Since 1992 – Seven Switching Fatalities Have Occurred in August**
- **Two August fatalities happened within a day of each other:**

**Tracy, CA on 8/11/93.....Evandale, TX on 8/12/93**

## EXECUTIVE SUMMARY

### General

Since the release of the *SOFA Report: Findings and Recommendations of the SOFA Working Group* in October 1999, the SOFA Working Group (SWG) has undertaken activities directed toward the goal of Zero Switching Fatalities. SWG activities focus on:

- Reviewing the 48 switching fatalities that occurred through December 2003, since the 76 fatalities upon which the *SOFA Report* was based;
- Drawing the attention of those engaged in switching operations to the Five Operating Recommendations made in the *SOFA Report*;
- Identifying “Special Switching Hazards” such as close clearance, being struck by mainline trains, and shoving that resulted in switching fatalities that were not necessarily preventable by one or more Operating Recommendations;
- Studying Severe Injuries, such as amputations, which cause harm to employees engaged in switching operations; and
- Publicizing information about the number and type of switching fatalities and Severe Injuries.

### Activities

This report describes SWG activities, provides updated information on the number and type of switching fatalities occurring since the release of the *SOFA Report*, and – importantly – discusses how fatalities occur and can be prevented. Below is a summary of SWG activities since October 1999.

- **Zero Switching Fatality Goal.** The SWG established a Zero Switching Fatality Goal with no tolerance for any other outcome. There were 6 switching fatalities in 2002, the lowest on record. SWG fatality records go back to 1975. The next lowest count was 7 in 1996. In 2003, there were 10 switching fatalities. In 2004 through June, there have been 4 fatalities.

Because switching fatalities continue to occur, the SWG recognizes additional safety efforts are needed, including those based on the Five Operating Recommendations, to achieve the Zero Switching Fatality Goal.

- **Ongoing Review of Switching Fatalities.** Since July 1, 1998, the date of the 76<sup>th</sup> and last switching fatality upon which the *SOFA Report* was based, 48 fatalities occurred to employees engaged in switching operations through December 31, 2003. The SWG reviewed each of these fatalities and entered available information into its database, the ‘SOFA Matrix,’ already containing descriptions of the 76 fatalities. Review of each additional switching fatality remains a SWG

priority. Maintaining the SOFA Matrix provides the SWG with a searchable database of current and past switching fatalities going back through January 2, 1992. Searches are undertaken to answer railroad-community queries, provide fatality count updates, and undertake analyses.

- **Ongoing Evaluation of the Five Operating Recommendations.** Forty-one of the 76 switching fatalities on the *SOFA Report* period, January 1, 1992, through July 1, 1998, involved one or more of the Five Operating Recommendations – 54 percent. Originally, when the *SOFA Report* was released, 37 switching fatalities formed the basis of one or more of the Operating Recommendations. Upon subsequent review of the 76 fatalities, the SWG determined that 4 more of the 76 fatalities also involved one or more Operating Recommendations.

When the *SOFA Report* was released in October 1999, an additional 10 fatalities occurred in the period July 2, 1998, through October 31, 1999. Six of these fatalities involved one or more Recommendations. Thus, from January 1, 1992, through October 31, 1999, 47 of the 86 switching fatalities involved Recommendations – 55 percent.

Since October 31, 1999, (the post-period report), the SWG reviewed 38 switching fatalities, 17 involving one or more Operating Recommendations – 45 percent. While the 54 vs. 45 percent reduction is worth noting, the focus should remain on the fact that fatalities occur and are preventable by the Five Operating Recommendations; and switching fatalities still occur at the rate of 10.3 per year.

- **Special Switching Hazards.** In addition to the Five Operating Recommendations, the SWG 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 Special Switching Hazard and an Operating Recommendation were included in these fatality counts.
- **Preventing Switching Fatalities.** The SWG has classified the 124 switching fatalities, occurring from January 1992 through 2003, as either involving an Operating Recommendation, or a Special Switching Hazard. In reality, fatality events are complex sequences of events occurring amidst a variety of background conditions. Some of the fatalities involving Operating Recommendations also involve Special Switching Hazards. However, for prevention purposes, adherence to the Operating Recommendations and awareness of Special Switching Hazards will potentially prevent all switching fatalities.
- **Periodic Safety Alerts.** The SWG uses the SOFA Matrix, containing the history of 124 fatalities, to identify trends, commonalities, and Special Switching Hazards among fatality events. When such patterns occur, the SWG informs those engaged

in switching operations. When the SWG recognized recently that 13 fatalities resulted from employees being struck by mainline trains, it sent out an alert. Employees on the ground were struck by mainline trains while performing 'roll by' inspections, inspecting equipment, or getting on and off their equipment. The fatality events were described in detail in the alert.

Similarly, the SWG issued an alert in December 2003 calling attention to the 15 switching fatalities occurring in the 24-day period, December 22 through January 14, for the eleven years, 1992 through 2002. Only three years – 1992, 1996, and 2002 – in this period were switching-fatality free. Twelve of the 15 employees (80 percent) had 20 or more years of service; and thirteen of the 15 employees (87 percent) were over 40 years old.

In the alert, the SWG stressed that while this period is extremely risky, switching fatalities can occur at any time to anyone engaged in switching operations.

- **Appendix to SOFA Report.** In August 2000, the SWG published an appendix to the *SOFA Report* entitled *Findings and Recommendations of the SOFA Working Group, Appendix – Volume II*. It contains SWG working papers, many in the form of figures and tables, used to analyze fatality events, search for commonalities, and develop the Five Operating Recommendations contained in the *SOFA Report*.

This report is available electronically at the Federal Railroad Administration (FRA) Office of Safety Web site: <http://www.fra.dot.gov/us/content/102>.

- **Severe Injury Report.** In July 2001, the SWG published *Severe Injuries to Train and Engine Service Employees: Data Description and Injury Characteristics*. This report contains information developed from the review of 446 Severe Injuries occurring to employees from January 1, 1997, to March 31, 2000. 'Severe Injuries' are defined by the SWG as (1) potentially life threatening; (2) having a high likelihood of permanent loss of function; (3) likely to result in significant work restrictions; and (4) caused by a high-energy impact to the human body. (The full definition of Severe Injuries is given in Section 5.) Since 1997, on average, 132.7 Severe Injuries have occurred each year.

The SWG reviewed Severe Injuries because it felt the causes were similar to those of fatalities. However, the information necessary to determine that relationship does not exist. Severe Injuries are not formally investigated by the FRA, while fatalities to employees on duty are required to be investigated.

The *Severe Injury Report* is available electronically at the FRA's Office of Safety Web site: <http://www.fra.dot.gov/us/content/102>.

- **Best Practices Guidelines for Implementing Operating Recommendations.** In March 2000, George A. Gavalla, FRA's Associate Administrator for Safety, asked the SWG to develop guidelines – 'best practices' – for industry

implementation of the Five Operating Recommendations. The developed guidelines, shown in Appendix A, emphasized education and a positive, judicious approach to implementation; and that the Recommendations should not be used as a basis for discipline.

- **SOFA Video.** The SWG developed a video describing results of the *SOFA Report* with emphasis on the Five Operating Recommendations, and the fatality cases upon which each of the Recommendations were based. The SOFA video addresses the needs of the employees at the ballast level for information explaining the Operating Recommendations.
- **Crew Resource Management (CRM).** The railroad industry took the lead in initiating a Task Force to implement Additional Recommendation<sup>1</sup> made in the *SOFA Report*. The railroad industry Task Force created a generic program for train and engine employees. This CRM program provides a team-based framework through which to evaluate conditions, apply rules, and safely perform work tasks. Topics covered in the program include decision making, assertiveness, crew coordination, leadership, teamwork, situational awareness, and active practice and feedback
- **Industry Leadership Conference.** The SWG participates in periodic Leadership Conference Calls with representatives from the Association of American Railroads (AAR), the American Short Line and Regional Railroad Association (ASLRRRA), the Brotherhood of Locomotive Engineers and Trainmen (BLET)<sup>2</sup>, and the United Transportation Union (UTU). These calls developed out of a Railroad Safety Advisory Committee (RSAC) declaration.

The original purpose of these Leadership Conference Calls was a discussion by each representative of issues specific to their organizations' implementation of the SOFA Operating Recommendations and to report measurable results. The calls now include general discussions of SOFA-related issues. There have been eight calls to date.

- **The Five Lifesavers.** The SWG developed shortened versions of the Five Operating Recommendations. 'The Five Lifesavers' serve as reminders to employees engaged in switching operations of the Operating Recommendations that will reduce their risk – and that of crew members. The Five Lifesavers are not meant as substitutes for the more comprehensive Recommendations that represent a series of safe actions that employees can take in reducing their risks in switching operations.

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<sup>1</sup> These recommendations for the most part do not involve switching operations directly (unexpected train movement being the exceptions) which the SWG believes, nonetheless, will help reduce risk in switching operations and facilitate the collection of fatality information.

<sup>2</sup> Note: Brotherhood of Locomotive Engineers and Trainmen (BLET) was formerly the Brotherhood of Locomotive Engineers (BLE).

## The Five Lifesavers

1. Secure equipment before action is taken.
2. Protect employees against moving equipment.
3. Discuss safety as the beginning of a job or when a project changes.
4. Communicate before action is taken.
5. Mentor less experienced employees to perform service safely.

It should be noted that the Five Lifesavers and the Operating Recommendations are for all employees engaged in switching operations – not just yard employees. Switching fatalities occur at all locations – yards, mainlines, industries, and sidings – wherever switching occurs.

- **SOFA Educational Material.** The SWG developed educational safety material: hats, pens, wallet-size cards, magnetic strips that can be applied to a refrigerator (allowing family members to be aware of safety efforts), stickers, and switch-list covers. Much of this material will serve as a reminder to work safely when engaged in switching operations.
- **Speaking Publicly About Switching Fatalities.** The SWG speaks to its respective member organizations, and other groups involved in railroad safety. These discussions include reviews of the Five Operating Recommendations, SWG activities, and updates of switching fatalities and Severe Injuries. As an example, on February 10, 2003, the SWG spoke at the *2003 Winter Meeting of the American Association of Railroad Superintendents (AARS)* in Chicago, Illinois.
- **Ballast Level Safety Information.** The SWG periodically provides the railroad industry with updated counts of switching fatalities, Severe Injuries, and amputations (a type of Severe Injuries). It is the intent of the SWG that this information reaches those actively engaged in switching operations – employees and managers at the ballast level. The updates also include descriptions of the sequence of events leading to specific types of fatalities. It is hoped that by drawing attention to past fatalities, future fatalities can be prevented.
- **Examining Experimental Safety Proposals and Devices.** The SWG has examined several proposals and experimental devices that were developed to enhance safety in switching operations. These devices include methods for detection of rail equipment, reflectorization, warning alarms, and physical characteristics identification training. The SWG encourages the investigation of technologies holding promise for safer switching operations.
- **SOFA Safety Web Site.** The SWG maintains a Web page on the FRA's Office of Safety Web site containing safety information and access to electronic copies of SOFA reports and a PowerPoint presentation:  
<http://www.fra.dot.gov/us/content/102>.

- **Review of Additional Recommendations.** In the *SOFA Report* of October 1999, the SWG made Additional Recommendations. These Additional Recommendations (listed in Section 1.6) are for the most part recommendations not involving switching operations directly (unexpected train movement being the exception) that the SWG believes, nonetheless, will help reduce risk in switching operations and facilitate the collection of fatality information. As a result of these Additional Recommendations, the FRA updated investigational protocols and adopted a more consistent procedure for collecting, and analyzing switching fatality investigation reports.

## Seven August Switching Fatalities, 1992 through 2003

Seven of the 128 switching fatalities occurring since January 1, 1992, took place in August:

Date	RR	Location	Age	Service (yrs)	Employee's Job	Employee Act	Employee Location	Fatal Event	Movement Direction
8/04/93	UP	Pryor, OK	42	18	road brakeman	riding	on end of car	derailment	shoved
8/11/93	SP	Tracy, CA	47	29	road brakeman	getting on	on end of car	struck by on-track equipment	shoved
8/12/93	ATSF	Evandale, TX	52	31	road brakeman	standing	on track	struck by on-track equipment	shoved
8/15/97	UP	Elko, NV	53	28	yard brakeman	adjusting drawbar	between cars or locomotive	sudden/unexpected movement of equipment	free-running
8/11/00	BNSF	Port of Los Angeles, CA	36	4	road brakeman	walking	on track	struck by on-track equipment	shoved
8/08/02	CWRO	Cleveland, OH	53	34	yard conductor	riding	on side of car	struck against object	shoved
8/26/03	LC	Chester, SC	29	4	road conductor	adjusting coupler	between cars or locomotive	struck by on-track equipment	shoved

## Seven Switching Fatalities in August, 1992 through 2003

- The average age of the 7 employees was 44.6 years old. The average length of service was 21.1 years.
- Shoving was the direction of movement in 6 fatalities. The Switching Operations Fatality Analysis Group considers shoving a Special Switching Hazard requiring extreme caution.
- Two August fatalities happened within a day of each other: Tracy, CA on 8/11/93; and Evandale, TX on 8/12/93.

## PLEASE MAKE AUGUST A SAFE SWITCHING MONTH

The SWG\* urges employees engaged in switching operations to be aware of The Five Lifesavers. The 'Lifesavers' are a shortened version of the Five Operating Recommendations, which can be obtained by downloading the *SOFA Report* from the FRA's Web site: <http://www.fra.dot.gov/Content3.asp?P=102>

- Secure equipment before action is taken.
- Protect employees against moving equipment.
- Discuss safety at the beginning of a job or when a project changes.
- Communicate before action is taken.
- Mentor less experienced employees to perform service safely.

SWG urges employees engaged in switching operations to recognize Special Switching Hazards like:

Close Clearances

Movement of Mainline Trains

Operations When Shoving Is the Direction of Movement

Places or Objects Causing Tripping, Slipping, Falling

Unexpected Movement of Railcars

Free Rolling Railcars

Unsecured Cars

Motor Vehicles and Loading Devices

Equipment Defects

\* The SOFA Working Group (SWG) is comprised of representatives from the Federal Railroad Administration (FRA), American Short Line and Regional Railroad Association (ASLRRA), the Association of American Railroads (AAR), the Brotherhood of Locomotive Engineers and Trainmen (BLET), the United Transportation Union (UTU), and the Volpe National Transportation Systems Center (VNTSC).

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

### Injuries

### Amputations <sup>3</sup>

January 1992 to April 2004

	1997	1998	1999	2000	2001	2002	2003	2004	1997	1998	1999	2000	2001	2002	2003	2004
JAN	11	13	16	15	21	12	11	10	1	0	2	1	0	0	2	2
FEB	17	15	9	9	9	13	17	14	0	1	0	1	0	2	1	2
MAR	14	12	17	11	10	10	13	10	3	4	3	2	1	1	3	1
APR	8	10	6	10	12	6	9	12	1	2	0	1	2	0	1	1
<b>YTD <sup>2</sup></b>	<b>50</b>	<b>50</b>	<b>48</b>	<b>45</b>	<b>52</b>	<b>41</b>	<b>50</b>	<b>46</b>	<b>5</b>	<b>7</b>	<b>5</b>	<b>5</b>	<b>3</b>	<b>3</b>	<b>7</b>	<b>6</b>
MAY	6	12	8	8	12	14	9		1	2	3	0	2	2	2	
JUN	9	10	8	11	8	5	10		2	1	1	0	1	0	0	
JUL	9	14	10	8	10	7	6		1	5	1	0	4	0	1	
AUG	13	10	11	14	8	10	7		1	0	1	4	0	1	0	
SEP	10	11	15	10	20	12	5		2	4	3	2	5	4	0	
OCT	12	12	16	10	5	11	9		2	5	2	2	0	0	2	
NOV	12	9	12	11	13	14	10		2	2	2	2	3	0	1	
DEC	18	9	7	22	12	9	8		4	1	0	4	1	1	2	
<b>totals</b>	<b>139</b>	<b>137</b>	<b>135</b>	<b>139</b>	<b>140</b>	<b>123</b>	<b>114</b>		<b>20</b>	<b>27</b>	<b>18</b>	<b>19</b>	<b>19</b>	<b>11</b>	<b>15</b>	

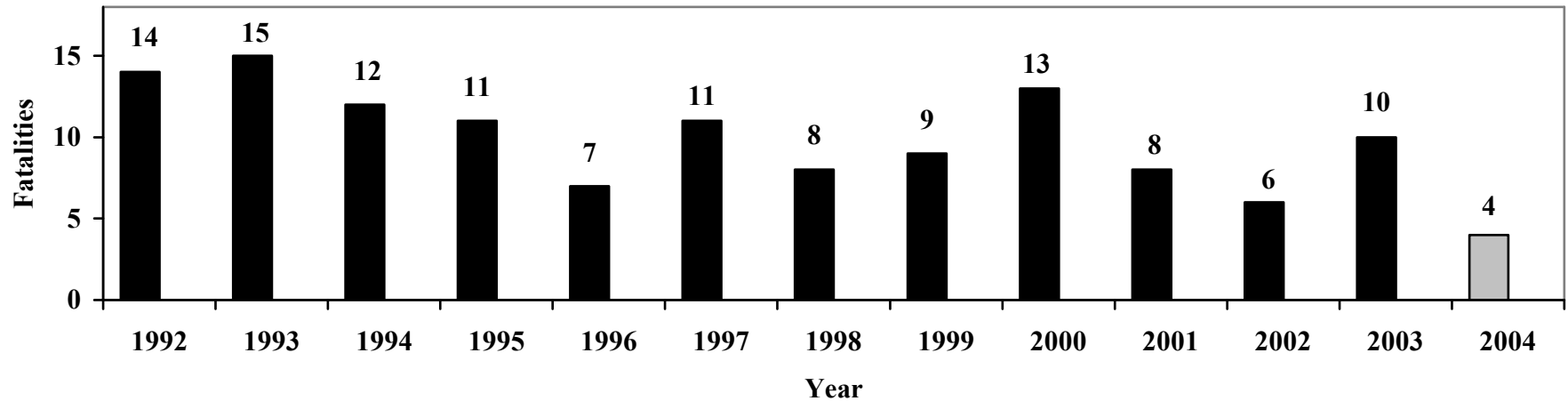
<sup>1</sup> 'Severe Injuries' were defined by the SOFA Working Group as (1) potentially life threatening; (2) high likelihood of permanent loss of function, permanent occupational limitation, or other permanent disability; (3) likely to result in significant work restrictions; and (4) result from a 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 website.

<sup>2</sup> April is the latest month of Severe Injuries available from the FRA's Web site as of July 15, 2004.

<sup>3</sup> 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.

## 128 Switching Fatalities Since 1992

The Switching Operations Fatality Analysis (SOFA) Group has reviewed each switching fatalities back to 1992. Since then, there have been 128 fatalities. There are risks to employees engaged in switching operations. On average, 10.3 fatalities occur each year. Already there have been 4 switching fatalities in 2004. **Please take caution. And observe the Five Operating Recommendations; and recognize Special Switching Hazards.**



### Four Switching Fatalities in 2004...Make August Switching Fatality Free

- On January 14th, a NS conductor, with four years service, was killed when struck by a train he was switching in Kankakee Yard, Kankakee, Illinois.
- On March 10th, a 46-year old Metro North Commuter Rail conductor, with 27-years service, was killed when struck by his own equipment at the Metro North Stamford Yard, Stamford, CT.
- On May 13th, a 38-year old Michigan Southern Railroad conductor was killed when he apparently slipped and fell from a car he was riding near Sturgis, Michigan.
- On May 18th, a 35-year old Norfolk Southern brakeman, with 6-years of service, was killed when the lead car he was riding was struck by a tractor-trailer in Elwood, Indiana.

(Note: Information on the four switching fatalities is preliminary, pending investigation.)