Inexperience in Switching: Some Remedies

SOFA Switching Fatality and Severe Injury Update – 2015 Third Quarter

PLEASE POST IMMEDIATELY

- **Two switching fatalities in 2015 through September 07:**

  August 12, 2015 – NS – Hattiesburg, MS: A trainee with <u>three weeks service</u> suffered fatal injuries while working within a local propane industry. The preliminary investigation revealed that the trainee was found coupled between the twenty-fourth (24th), the last car of the cut they were shoving, and the cars they intended to pick up within the industry. [based on preliminary information with circumstances subject to change pending investigation]

  July 25, 2015 – CN – Homewood, IL: A yard conductor with <u>26 months service</u> suffered fatal injuries while working within the CN Markham Yard. The preliminary investigation revealed that the conductor attempted to mount moving equipment as the shove move passed his location. It appears he lost his footing and fell to the ground along the outside rail. As the locomotive continued, it is probable that the locomotive fuel tank struck the employee in the head while he was on the ground. [based on preliminary information with circumstances subject to change pending investigation]

- **Both switching fatalities in 2015 involved employees with limited years of service, three weeks and 26 months. See pgs. 2-5 for Inexperience in Switching: Some Remedies**

Switching Operations Fatality Analysis (SOFA)

- **A voluntary, non-regulatory, railroad-safety partnership comprised of representatives from AAR, ASLRRA, BLET, FRA, and UTU**
- **Seeks to prevent switching Fatalities through education based on facts about causes**
- **SOFA is not part of a rulemaking or regulatory process**
- **Recognizes that all have responsibility for switching safety: employees, managers, and regulators**
- **SOFA's goal is Zero Switching Fatalities achieved through education and non-punitive interactions among stakeholders**
- **Find SOFA reports and information at: http://www.fra.dot.gov/SOFA [accessed August 30, 2015]**

Inexperience in Switching: Some Remedies

SOFA classifies a switching fatality as involving 'inexperience' if the deceased had 18 or fewer months (1.5 years) of railroad service. Quoted excerpts below about inexperience are taken from the 2011 SOFA Report, *Findings and Recommendations of the SOFA Working Group, Vol. 1, March 2011 Update*. Throughout the quoted material, tables are referenced which contain information about inexperience in switching. The 2011 SOFA Report, is available at**:** **http://www.fra.dot.gov/SOFA**

SOFA recognizes that 'inexperience' in switching is a much broader concept than just months of service:
"SWG [SOFA Working Group] believes that an employee who has a limited familiarity of the physical work environment or has not been at a location for an extended period may be an "inexperienced employee"." *Footnote 13, p. 23*

SOFA became concerned about inexperience when reviewing switching fatalities for its first report in 1999:
"While working on the first SOFA report in October 1999, the SWG was concerned with the number of inexperienced employees who were fatally injured during switching operations and developed Operating Recommendation 5:

> Crew members with less than one year of service [subsequently amended to 1.5 years] must have special attention paid to safety awareness, service qualifications, on-the-job training, physical plant familiarity, and overall ability to perform service safely and efficiently. Programs such as peer review, mentoring, and supervisory observation must be utilized to insure employees are able to perform service in a safe manner.

The SOFA update of August 2004 urged the railroad industry to include the principles of CRM [Crew Resource Management] in their training programs to help reduce fatalities to inexperienced employees." *3.4.2 Background, p. 23*

SOFA revised its emphasis on mentoring in its 2011 SOFA Report:
"Since the 1999 Report, the SWG emphasis on mentoring has not achieved a substantial reduction in SOFA 5 [related to inexperience] fatalities. It is critical for the railroad industry to provide the inexperienced employee adequate OJT. Without abandoning the commitment to mentoring, the railroad industry should improve OJT to include targeted training for the inexperienced employee. Providing follow-up review of skills, and targeted training by the railroad industry enables an inexperienced employee to meet the demands of the job. Smaller railroads in particular may benefit from a review of their OJT, and improved follow-up with inexperienced employees." *3.4.4 Inexperienced Employee (SOFA 5) – SOFA Safety Advisory Statement 2010, p. 27*

Inexperience in Switching: Some Remedies (continued)

Based on available information, SOFA did not find evidence that inexperience employees cause harm to experienced employees:
"During the SSF [SOFA Safety Forum] Job Briefing breakout session there was a discussion about expanding the criteria for SOFA 5 [Lifesaver/Recommendation from 1999]. The proposed expansion would include cases where an action or inaction by an inexperienced employee may have contributed to the fatality of another employee. The SWG responded by reviewing all case data for employee experience and found many older cases did not contain data on the experience level of the surviving crew members. In cases where experience data was present, the SWG often could not determine the role of the inexperienced crew member.

After examining all cases, the SWG found only one clear instance where the action of an inexperienced employee may have contributed to the fatality of another employee. This case, for the purposes of our study, has not been included in the count of SOFA 5 cases. The SWG will consider this issue again during its next series of case reviews." *7.4.3 Improve the SOFA Database, p. 73*

There is an exception to the above conclusion – a crew with two inexperienced members:
"Table 3-6 shows SOFA cases where there was a surviving crew member who also had 1.5 years of experience or less. The table shows 14 of the 32 SOFA 5 cases (44%) involved an inexperienced surviving crew member. The data suggests that a train crew with multiple inexperienced crew members faces an increased risk of a fatality." *3.4.3 Statistical Background, p. 25*

Inexperience in Switching: Some Remedies (continued)

SOFA Safety Forum

SOFA sponsored a SOFA Safety Forum (SSF) on February 25, 2010, in Washington, DC, to address many issues of safety in switching. Inexperience was thoroughly discussed by participants from labor, management, and government. Below are issues and remedies about inexperience based on the SSF for the railroad industry to consider. This quoted material appears on pgs. 26-27 of 2011 SOFA Report.

Issue: Possible Imbalance between Classroom Training and OJT

"There may not be an effective balance of classroom training and On-The-Job-Training (OJT) within the railroad industry. Although necessary, classroom rules training alone is not enough. OJT training may need to be reviewed to allow those with less than 1.5 years of experience more time to gain familiarity with the demands of the job. As an example, inexperienced employees shown in Table 3-3 above were fatally injured when they failed to control a shove movement."

Remedy

"Review OJT programs. A well designed OJT program should make sure the inexperienced employee receives adequate training. Following the period of OJT, identify the areas of inadequacies of the inexperienced employee's skills to provide targeted training that will allow the employee to meet the demands of the job. Smaller railroads in particular may benefit from a review of their OJT and improved follow-up with inexperienced employees."

Issue: Finding Enough Experienced Employees to Mentor New Employees

"Mentoring was a method suggested in the 1999 SOFA report to acclimate the new hire employee to the railroad environment and its dangers. As the rate of attrition grows and the number of new hires increases, it can be a challenge to find those who can or will work with the new hire employee as a mentor. Changes in crew size, sometimes through introduction of new technologies, have made mentoring more challenging. Inexperienced employees may face the possibility of a different mentor each day or, find themselves without a "mentor" who is willing or capable. Even if good mentors can be found, inexperienced employees may believe they already know correct procedures, tuning out their mentors at critical moments."

Remedy

"Set criteria for good mentors, recruit them, and ensure inexperienced employees have a good mentor on the crew. Emphasize personal accountability to the new hire. The inexperienced employee should respect the mentoring process that equates to good listening and a willingness to apply the safe practices that are taught."

Inexperience in Switching: Some Remedies (continued)

Issue: Risk of Fatality Increased When Crews Have More Than One Inexperienced Employee
"The risk of a fatality occurring is compounded when there is more than one inexperienced employee on the crew (See Table 3-4). The inexperienced employee may face difficulties in performing at an effective level because of the relative short period of time spent in the craft or because of the amount of time spent in training. Having multiple inexperienced employees on the same crew possibly creates an excessive burden on each crew member."

Remedy
"Avoid making up crews with more than one inexperienced employee. When inexperienced employees are working, an effort should be made not to place multiple employees with less than 1.5 years of experience on the same crew. If this is not possible, local management should be notified immediately of the crew make up."

Issue: Productivity Expectations from Management and Crew May Not Change
"Productivity expectations from management and crew may not change when an inexperienced crew member is present. An inexperienced employee may feel pressured to proceed with a task even when he or she is uncertain about the situation."

Remedy
"The railroad industry has an obligation to ensure inexperienced employees understand their safety is far more important than productivity. Accordingly, the railroad industry needs to adjust productivity expectations while inexperienced employees gain competency."

Issue: Measuring the Effectiveness of the Application of Operating Recommendation 5
"It is challenging to measure the effectiveness of the application of Operating Recommendation 5 (i.e., Inexperienced Employee). Crafting an effective behavioral rule, practice, or procedure that can be assessed for compliance is difficult and suggests the railroad industry needs to go beyond the traditional, "rulebook" approach."

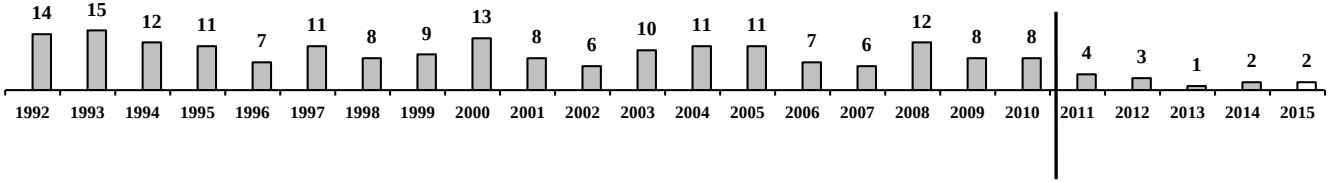
Remedy
"The railroad industry should identify additional methods to make education, training, and mentoring of inexperienced employees more effective, including a method to provide feedback on what approaches and techniques work well."

Note: As mentioned, the quoted material above appears on pgs. 26-27 of 2011 SOFA Report.

DATA SECTION – 2015 Third Quarter Update

Lower switching fatality counts since 2011…the goal of zero switching fatalities

199 Fatalities, by year: 1992 through 2014, full year; 2015, part year through September 07



20 Recent Switching Fatality Cases, January 01, 2010 through September 07, 2015

- **These 20 fatality cases occurred subsequent to the 179 cases (1992 through 2009) which formed the basis of the 2011 SOFA Report**
- **The purpose in displaying these 20 cases is to identify any potential <u>emerging issues</u> concerning risk in switching operations:**
  - **Five of the 6 Close/No Clearance cases involve the temporary hazard of cars left afoul**
  - **Four of the 20 cases involve inexperience**

Year	Count	Date	City	State	Reviewed or Preliminary	<u>Fatality Reasons: brief description</u> Risks other than those listed are often involved. Cases marked 'preliminary' are subject to revision of event reasons
2010	1	04/23/10	Riverdale	IL	reviewed	Lack or Inadequate Job Safety Briefing
	2	05/31/10	Kearny	NJ	reviewed	Close/ No Clearance (fueling structure)
	3	06/10/10	Doswell	VA	reviewed	Struck by Mainline Train; and Drugs and Alcohol
	4	07/01/10	Meridian	MS	reviewed	Employee Tripping, Slipping, or Falling
	5	07/13/10	East Deerfield	MA	reviewed	Going between Rolling Equipment
	6	09/02/10	Bridgeport	NJ	reviewed	Close/ No Clearance (cars left afoul)
	7	09/04/10	Mobile	AL	reviewed	Industrial Hazard; and Miscellaneous Causes
	8	10/11/10	Orange	TX	reviewed	Inexperience; and Employee Tripping Slipping, or Falling
2011	9	02/08/11	Kankakee	IL	reviewed	Close/ No Clearance (cars left afoul)
	10	07/25/11	Bedford Park	IL	reviewed	Going between Rolling Equipment; and Unsecured Cars
	11	08/15/11	Kansas City	KS	reviewed	Going between Rolling Equipment; and Miscellaneous Causes
	12	09/08/11	Botkins	OH	reviewed	Going between Rolling Equipment; and Unexpected Movement of Railcars
2012	13	01/30/12	Gary	IN	reviewed	Close/ No Clearance (cars left afoul); and Environment; and Industrial Hazard
	14	05/28/12	Kenmare	ND	reviewed	Close/ No Clearance (cars left afoul); and Inexperience; and Failure to Confirm Route of Movement
	15	07/31/12	Mason City	IA	reviewed	Going between Rolling Equipment; and Lack or Inadequate Job Safety Briefing; and Unexpected Movement of Railcars; and Unsecured Cars
2013	16	02/16/13	Cleveland	OH	reviewed	Inexperience; and Drugs and Alcohol; and Employee Tripping, Slipping, or Falling
2014	17	06/24/14	Birmingham	AL	preliminary	Derailment
	18	10/08/14	Colorado Springs	CO	preliminary	Close/ No Clearance (cars left afoul)
2015	19	07/25/15	Homewood	IL	preliminary	Came in contact with a shove movement (possibly stumbled trying to mount)
	20	08/12/15	Hattiesburg	MS	preliminary	Inexperience

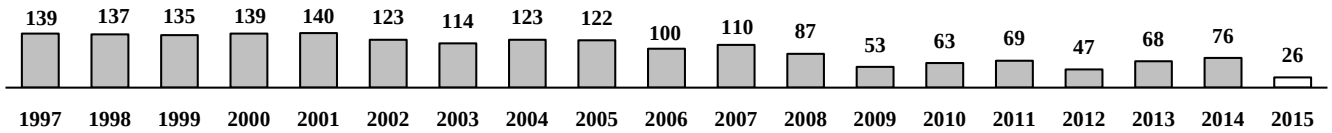
(Note the four cases marked 'preliminary' have not yet been reviewed by SOFA. Thus, event reasons may change upon review)

SOFA-defined Severe Injury Update

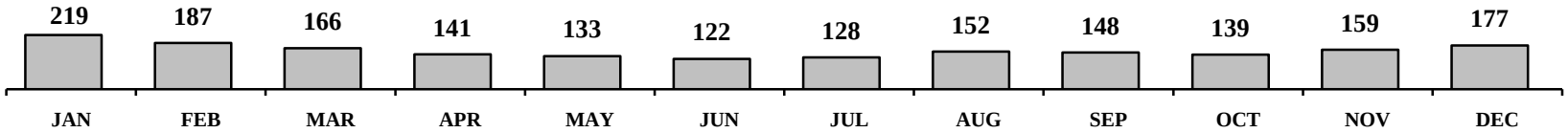
Definition: Based on its interests (i.e., potentially involving the same factors as fatalities), *Severe Injuries* are defined by the SOFA Working Group as (1) potentially life threatening; (2) having a high likelihood of permanent loss of function, permanent occupational limitation, or other permanent disability; (3) likely to result in significant work restrictions; and (4) resulting 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. 1997 is the first year these Injuries to train and engine service employees can be determined as defined by the interest of the SOFA Working Group. For more information, see *Severe Injuries to Train and Engine Service Employees: Data Description and Injury Characteristics*. July 2001.

Note: The definition of SOFA-*defined Severe Injuries* is not to suggest that other injuries and illnesses resulting from operations are not also 'severe' and/or cause hardship to employees.

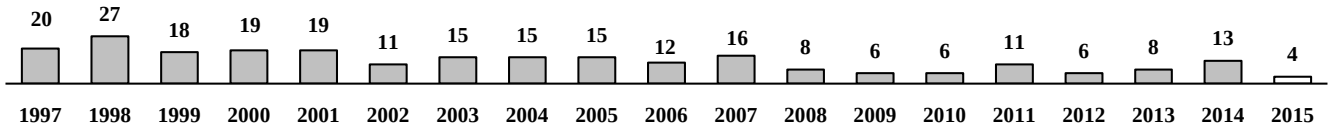
1,876 SOFA-defined Severe Injuries, by year: 1997 through 2014, full year; 2015, through June



1,876 SOFA-defined Severe Injuries, by month: January 1997 through June 2015



249 Amputations (counts are included in Severe Injuries), by year: 1997 through 2014, full year; 2015, through June



SOFA-defined Severe Injuries,
January 1997 through June 2015

Among *SOFA Updates*, counts previously presented may change based on revisions to FRA data. The latest month available from the FRA lags the calendar month of this *Update* by three months. Information used in this table was extracted on September 01, 2015, from FRA's publically available data.

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	totals	average
JAN	11	13	16	15	21	12	11	11	20	10	14	13	6	6	8	9	8	6	9	**219**	**11.5**
FEB	17	15	9	9	9	13	17	14	10	6	15	12	4	7	9	2	5	10	4	**187**	**9.8**
MAR	14	12	17	11	10	10	13	10	9	9	11	5	5	4	5	6	3	5	7	**166**	**8.7**
APR	8	10	6	10	12	6	9	13	10	7	8	9	5	7	5	2	4	6	4	**141**	**7.4**
MAY	6	12	8	8	12	14	9	6	6	8	3	7	1	7	8	4	5	7	2	**133**	**7.0**
JUN	9	10	8	11	8	5	10	9	7	11	5	3	6	4	2	6	2	6	5	**127**	**6.7**
to date	**65**	**72**	**64**	**64**	**72**	**60**	**69**	**63**	**62**	**51**	**56**	**49**	**27**	**35**	**37**	**29**	**27**	**40**	**31**		
JUL	9	14	10	8	10	7	6	10	5	12	8	1	4	4	5	3	7	5		**128**	**7.1**
AUG	13	10	11	14	8	10	7	14	10	10	13	5	4	5	5	1	5	7		**152**	**8.4**
SEP	10	11	15	10	20	12	5	4	9	6	10	12	5	3	4	5	4	3		**148**	**8.2**
OCT	12	12	16	10	5	11	9	7	11	5	11	4	2	4	4	1	6	9		**139**	**7.7**
NOV	12	9	12	11	13	14	10	10	13	8	6	8	3	6	9	3	5	7		**159**	**8.8**
DEC	18	9	7	22	12	9	8	15	12	8	6	8	8	6	5	5	14	5		**177**	**9.8**
totals	**139**	**137**	**135**	**139**	**140**	**123**	**114**	**123**	**122**	**100**	**110**	**87**	**53**	**63**	**69**	**47**	**68**	**76**		**1,876**	**100.6**

Amputations (a type of Severe Injury), January 1997 through June 2015

A type of SOFA-defined Severe Injury, Amputations are displayed separately because of the extreme trauma to employees engaged in switching, and the likelihood of permanent occupational and lifestyle limitations. Counts for Amputations are contained in the counts of SOFA-defined Severe Injuries (shown on previous page). Information used in this table was extracted on September 01, 2015, from FRA's publically available data.

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	totals	average
JAN	1	0	2	1	0	0	2	2	2	0	1	1	1	0	2	0	0	0	1	**16**	**0.8**
FEB	0	1	0	1	0	2	1	2	0	2	1	0	0	1	2	0	1	1	1	**16**	**0.8**
MAR	3	4	3	2	1	1	3	1	2	1	0	1	1	0	0	1	0	1	0	**25**	**1.3**
APR	1	2	0	1	2	0	1	1	2	2	3	3	1	0	1	0	0	0	1	**21**	**1.1**
MAY	1	2	3	0	2	2	2	0	0	1	1	0	0	1	2	0	2	2	0	**21**	**1.1**
JUN	2	1	1	0	1	0	0	1	0	0	1	1	0	0	1	0	0	1	1	**11**	**0.6**
to date	**8**	**10**	**9**	**5**	**6**	**5**	**9**	**7**	**6**	**6**	**7**	**6**	**3**	**2**	**8**	**1**	**3**	**5**	**4**		
JUL	1	5	1	0	4	0	1	2	1	2	2	0	1	1	0	0	1	2		**24**	**1.3**
AUG	1	0	1	4	0	1	0	2	2	0	3	0	1	1	0	0	1	1		**18**	**1.0**
SEP	2	4	3	2	5	4	0	0	3	1	1	2	0	1	0	2	0	1		**31**	**1.7**
OCT	2	5	2	2	0	0	2	2	0	0	2	0	0	1	1	1	2	2		**24**	**1.3**
NOV	2	2	2	2	3	0	1	1	2	3	1	0	0	0	1	0	0	2		**22**	**1.2**
DEC	4	1	0	4	1	1	2	1	1	0	0	0	1	0	1	2	1	0		**20**	**1.1**
totals	**20**	**27**	**18**	**19**	**19**	**11**	**15**	**15**	**15**	**12**	**16**	**8**	**6**	**6**	**11**	**6**	**8**	**13**		**249**	**13.4**

Switching Fatalities, SOFA-defined Severe Injuries, and Other Reportable Events

***Source*: Switching fatalities from SOFA Database; all other information used in this table was extracted on September 01, 2015, from FRA's publically available data. *Note*: Among *SOFA Updates*, counts previously presented may change based on revisions to FRA data**

Year	SOFA Switching Fatalities	SOFA-defined Severe Injuries	Amputations (counts are included in SOFA-defined Severe Injuries)	All Employee On-duty Fatalities less SOFA Switching Fatalities	T&E Employee On-duty Fatalities less SOFA Switching Fatalities	All Reportable Employee Casualty to T&E Employees (includes Fatalities and Severe Injuries)	All Accidents	Human Factor Accidents	Highway-Rail Crossing Incidents	Trespasser Incidents (not at crossings)
1992	14	*	*	20	6	6,648	2,359	864	4,910	1,049
1993	15	*	*	32	16	5,649	2,611	865	4,892	1,032
1994	12	*	*	19	9	5,026	2,504	911	4,979	981
1995	11	*	*	23	10	4,215	2,459	944	4,633	955
1996	7	*	*	26	15	3,726	2,443	783	4,257	945
1997	11	139	20	26	10	3,489	2,397	855	3,865	**1,049
1998	8	137	27	19	8	3,642	2,575	971	3,508	**1,049
1999	9	135	18	22	12	3,835	2,768	1,031	3,489	924
2000	13	139	19	11	2	3,893	2,983	1,147	3,502	877
2001	8	140	19	14	6	3,561	3,023	1,035	3,237	915
2002	6	123	11	14	3	3,022	2,738	1,050	3,077	935
2003	10	114	15	9	3	2,935	3,019	1,230	2,977	896
2004	11	123	15	14	9	2,910	3,385	1,353	3,085	**878
2005	11	122	15	14	7	2,817	3,266	1,270	3,066	**878
2006	7	100	12	9	0	2,483	2,998	1,068	2,942	992
2007	6	110	16	11	4	2,520	2,693	1,047	2,778	877
2008	12	87	8	14	4	2,217	2,481	910	2,429	889
2009	8	53	6	8	2	1,972	1,912	656	1,933	760
2010	8	63	6	12	5	1,882	1,902	650	2,052	830
2011	4	69	11	17	11	1,734	2,022	746	2,061	772
2012	3	47	6	13	4	1,548	1,760	661	1,985	823
2013	1	68	8	13	2	1,765	1,834	697	2,102	861
2014	2	76	13	8	2	1,908	1,784	688	2,289	905
JAN-JUN 2014	1	40	5	2	0	948	888	335	1,144	424
JAN-JUN 2015	0	31	4	6	0	865	936	343	992	458
change	--	--	--	--	--	-8.8%	5.4%	2.4%	-13.3%	8.0%

***SOFA-defined Severe Injuries are defined only back to 1997** ****Counts happened to be identical for these successive years**