CALIFORNIA PUBLIC UTILITIES COMMISSION

Rail Safety and Carriers Division

Annual Report of Railroad Accidents Occurring in California

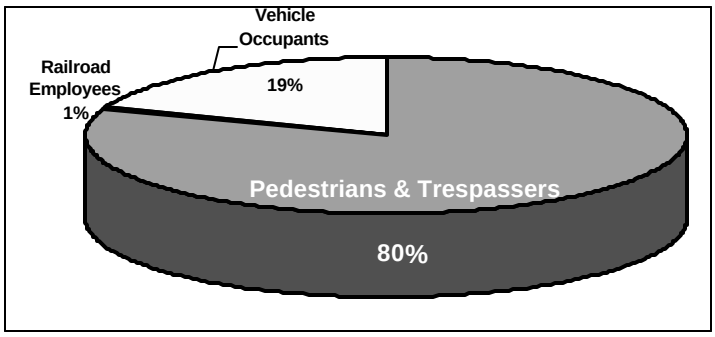
Calendar Year 1999

Executive Summary

Introduction

The purpose of the Annual Report of Railroad Accidents Occurring in California (Report) is to provide information regarding railroad and rail transit accidents/incidents involving passengers, motorists, pedestrians, trespassers, and employees. This report provides a concise record of railroad and rail transit accidents in California for 1999, and compares that record with those of the last 10 years. The Report reflects the on-going efforts to reduce the number of railroad and rail transit accidents in California over the past 10 years.

In 1999, there were a total of 753 accidents involving railroads and rail transit agencies. These rail-related accidents resulted in 134 fatalities; including 107 pedestrians, trespassers, and bicyclists, 26 occupants of vehicles, and one railroad employee. The majority of the 86 trespasser fatalities were the result of persons illegally trespassing on railroad/rail transit rights-of-way. These trespasser fatalities occurred at locations other than those authorized for public access (i.e. public highway- or pedestrian-rail grade crossings). Although some of the trespassing deaths were suicides, the majority of these fatalities, which included several children, were the direct result of persons illegally walking or playing on or along the tracks. Most of the 753 accidents and 134 deaths would not have occurred if pedestrians had not trespassed on railroad property and motorists had observed posted signs and warning devices.



1999 Rail Related Accident Fatalities

Summary of All Rail Accidents

TYPE OF ACCIDENT	TOTAL	KILLED	INJURED
Railroad	154	1	267
Railroad/LRV - Motorvehicle	306	26	162
Railroad/LRV - Pedestrian	186	107	80
Rail Transit	107	0	94
Total	753	134	603

Part I - Summary of Reportable Accidents/Incidents Occurring on Common Carrier Railroads

Part I of the Report identifies accidents and casualties on railroad property, and any accident or incident connected with a railroad operation reported to the Federal Railroad Administration (FRA). In 1999, California freight railroads operated 31.5 million train miles, an increase of 7.5% over 1998. The number of freight railroad

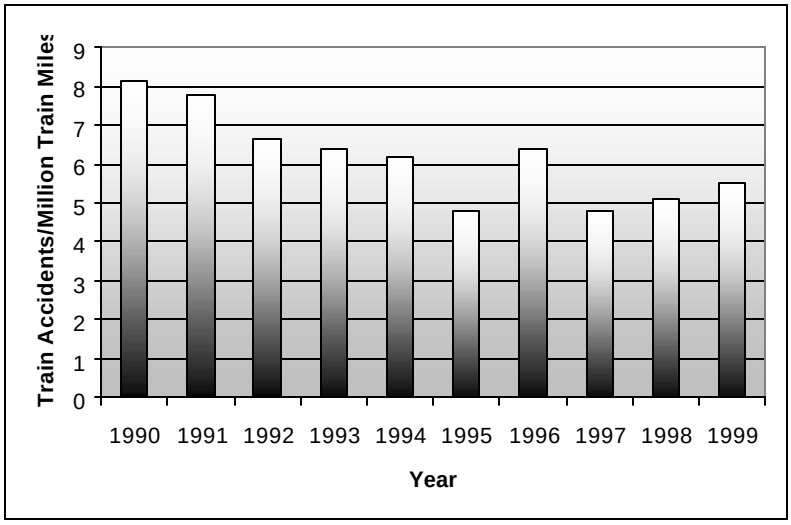
accidents increased from 128 accidents in 1998 to 149 accidents in 1999 (a 16% increase). During 1999, the total number of train accidents, freight and passenger trains combined, increased from 150 accidents in 1998 to 173 accidents in 1999. One train employee was killed on the job, and 267 were injured in 1999. This compares to one employee killed and 265 injured in 1998. The train accidents for 1999 resulted in a loss of 19.2 million dollars, an increase of about 34% from 1998.

Ratio of Train Accidents to Miles Traveled (1990-1999)

Year	Train Accidents*	Train Miles in Millions	Accident Rate Per Million Train Miles
1990	175	21.53	8.13
1991	163	21.03	7.75
1992	142	21.37	6.64
1993	138	21.55	6.40
1994	144	23.34	6.17
1995	126	26.21	4.81
1996	138	21.67	6.37
1997	123	25.63	4.80
1998	150	29.30	5.12
1999	173	31.49	5.49

*Train Accidents are those accidents meeting the threshold reporting requirements of FRA Form 54 which are collisions (excluding most grade crossing accidents), derailments, fires, explosions, natural disasters, and other events involving the operation of on-track equipment (standing or moving) and causing more than $6,600 of reportable damage.

Accident Rate Per Million Train Miles (1990-1999)

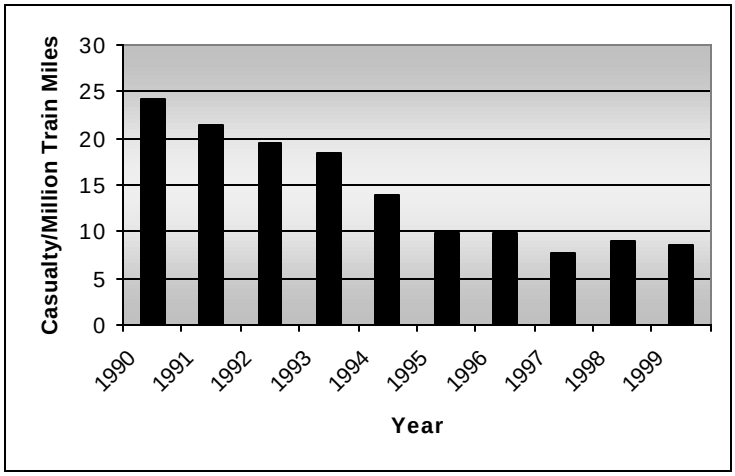


Executive Summary

Casualties to Train and Engine Crew (1990 –1999)

Year	Train Miles in Millions	Casualties to Train and Engine Crew			Casualty Rate Per Million Train Miles
		Killed	Injured	Total	
1990	21.53	4	517	521	24.2
1991	21.03	0	451	451	21.4
1992	21.37	1	415	416	19.5
1993	21.55	2	397	399	18.5
1994	23.34	1	324	325	13.9
1995	26.21	1	256	257	9.8
1996	21.67	3	212	215	9.9
1997	25.63	1	200	201	7.8
1998	29.30	1	265	266	9.1
1999	31.49	1	267	268	8.5

Casualty Rate Per Million Train Miles (1990-1999)

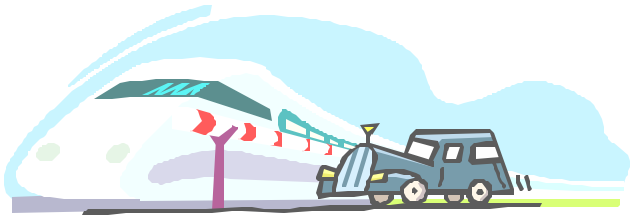


Executive Summary

Part II - Summary of Accidents/Incidents Occurring on Highway – Rail Grade Crossings as Reported by Common Carrier Railroads

Part II of the Report covers accidents at highway-rail grade crossings and accidents involving trespassers. These types of accidents involve the general public and are typically attributable to motorists and pedestrians ignoring signs and warning devices. Vehicles stalling or queuing on the tracks, drivers attempting to beat the train by maneuvering around activated gates, children playing on the tracks, trespassers crossing the tracks between public crossings as a shortcut and persons walking into or standing in front of an approaching train are examples of causes related to these type of accidents.

In 1999, there were 204 accidents at railroad crossings, resulting in 24 deaths and 73 injuries. The number of railroad grade crossing accidents increased by 9% from



1998 and casualties increased by 15%. Trespassers were involved in 130 accidents, resulting in 86 deaths and 44 injuries. This compares to 132 trespasser accidents with 79 killed, and 53 injured in 1998.

Between 1990 and 1999, the number of train accidents involving the general public have varied between a high of 369 accidents with 105 persons killed and 141 injured (1991) to a low of 278 accidents with 103 persons killed and 81 injured (1997).

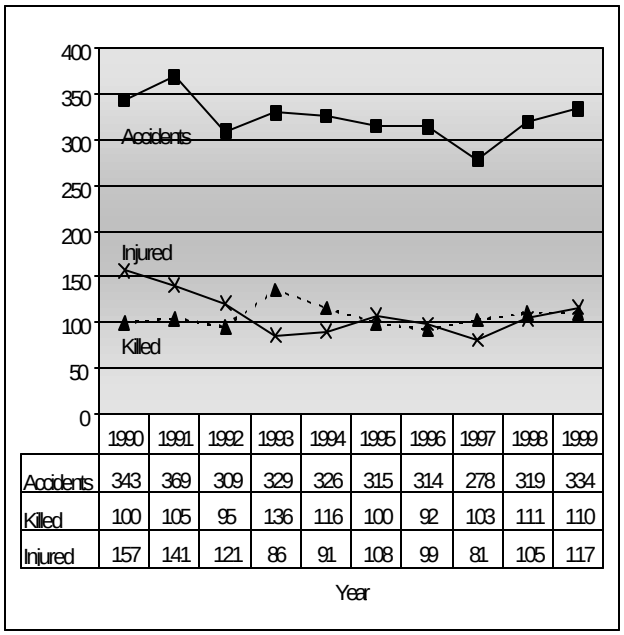
Types of Accidents Involving the General Public – 1999

Type of Accident	Accidents		Casualties			
	Total	% of Total	Killed	Injured	Total	% of Total
Grade Crossing Accidents*						
Vehicle-Train at Public Crossings	156	46.7	10	55	65	28.6
Vehicle-Train at Private Crossings	29	8.7	5	8	13	5.7
Miscellaneous	6	1.8	2	4	6	2.6
Pedestrian (Public & Private)	13	3.9	7	6	13	5.7
Subtotal	204	61.1	24	73	97	42.7
Between Crossings						
Trespasser	130	38.9	86	44	130	57.3
Total	**334**	**100**	**110**	**117**	**227**	**100**

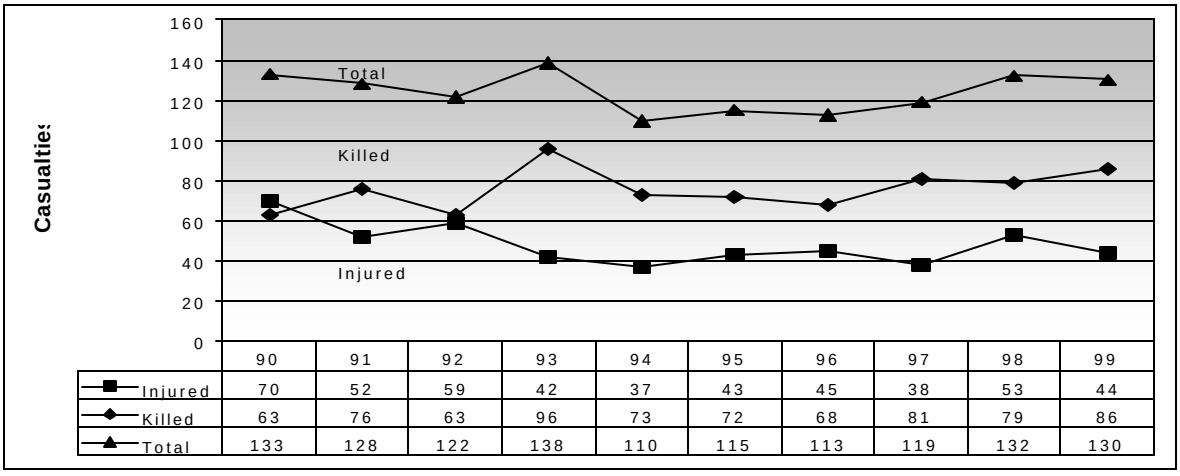
"Vehicle" includes automobile, bus, van, truck-trailer, truck, or motorcycle.
"Miscellaneous" includes those accidents at public and private crossings where the train struck a bicycle.
"Trespasser" includes those persons who are on railroad operating property, and whose presence is prohibited, forbidden, or unlawful.
*Grade Crossings are intersections of a roadway with a railroad track(s) when both are at the same elevation.

Executive Summary

Train Accidents Involving the General Public Including Trespassers (1990-1999)



A large portion of the decline in train accidents can be attributed to the State's ongoing rail safety programs. The state and federal governments have expended millions of dollars to improve safety at railroad crossings. These programs are the State-mandated Grade Separation Program that provides funds for eliminating accidents by separating railroad tracks and streets through the use of overpasses and underpasses and closing crossings; the Automatic Grade Crossing Protection Maintenance Fund that pays the cities and counties share of the cost for maintaining automatic grade crossing devices; the Federal Railway-Highway Crossing Improvement Program (Section 130) which provides funds to the state for the use of upgrading railroad warning devices such as gates, cantilevers, signage, flashing lights at grade crossings; and the Operation Lifesaver Program that educates the public on rail safety.



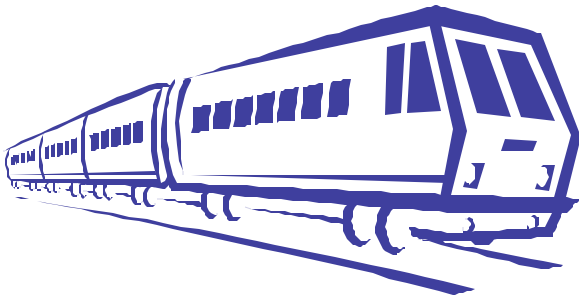
Trespasser Casualties (1990-1999)

Trespasser accidents have increased by approximately 18% between 1994 and 1999. The numbers of persons illegally using the railroad right-of-way for access in-between public crossings account for the increases. Public education programs and stricter enforcement of trespasser violations may help to reduce the number of train-pedestrian accidents.

Executive Summary

Part III - Summary of Reportable Accidents/Incidents Occurring on Light Rail, Rapid Rail, and Cable Car Transit System

Part III of the Report covers accidents associated with the three types of rail transit systems: light rail transit, rapid rail transit, and cable cars.

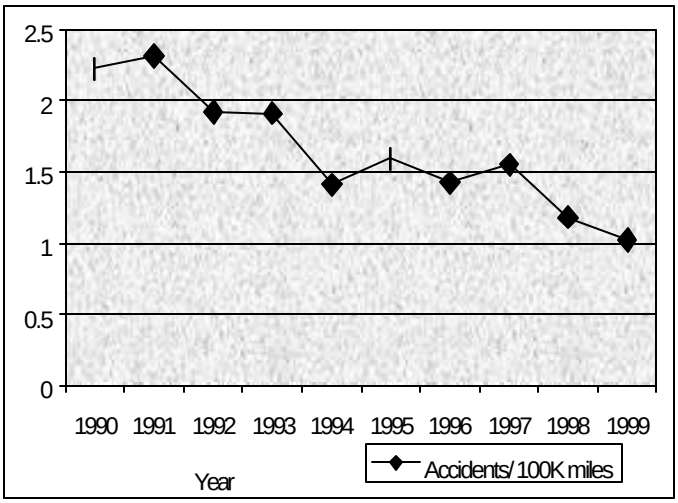


Accidents for All Rail Transit Systems – 1999

Transit Agency	Accidents*	Killed	Injured
LACMTA's Blue Line	50	10	40
MUNI LRV	107	1	74
SDTI	25	3	14
SRTD	13	4	48
VTA	22	2	4
Total Light Rail	217	20	180
BART	15	2	7
LACMTA's Green Line	1	0	1
LACMTA's Red Line	3	1	2
Total Rapid Rail	19	3	10
MUNI Cable Car	29	0	29
GRAND TOTAL	**265**	**23**	**219**

* Includes a total of eleven suicides and attempted suicides.

LRV-Vehicle Accidents Rates (1990-1999)



In 1999, there were 265 rail transit accidents, including 217 for light rail transit, 19 for rapid rail transit, and 29 for cable cars. The corresponding rail transit accident numbers for 1998 were 351, 293, 22, and 36, respectively. The rate of LRV-vehicle accident has dropped in the last ten years.

There were 242 rail transit killed and injured casualties, including 200 for light rail transit, 13 for rapid rail transit, and 29 for cable car associated with the 265 accidents. Rail transit casualties for light rail transit, rapid rail transit and cable car during 1998 were 277, 184, 9, and 84, respectively. Twenty-three persons were killed in light rail and rapid rail transit accidents in 1999, compared to 19 persons in 1998. The estimated total reported property damage costs for all rail transit systems during 1999 was $2.2 million compared to $1.8 million in 1998.

Executive Summary

Any questions or comments regarding the information contained in this report should be brought to the attention of:

Rail Crossings Projects Section
Rail Safety and Carriers Division

San Francisco Office
505 Van Ness Avenue
San Francisco, CA 94102

Phone Contact: Tack Joe (415) 703-2280
Tsj@cpuc.ca.gov

Los Angeles Office
320 West 4th Street, Suite 500
Los Angeles, CA 90013

Phone Contact: Rosa Muñoz (213) 576-7078
Rxm@cpuc.ca.gov

Additional information is available on our Web site at www.cpuc.ca.gov

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Preface

Preface

This report compiles railroad and rail transit accidents, and casualty data in California during 1999, as reported by the railroads to the Federal Railroad Administration (FRA) and the Public Utilities Commission (Commission). The railroads provide accident reports to the FRA under the authority of 49 CFR Part 225 of the Code of Federal Regulations. The rail transit agencies provide accident information to the Commission under the requirements of General Order 164-B. General Order 164-B provides the rules and regulations for safety oversight of the six rail transit agencies operating in California. The Commission also receives accident/injury information occurring on common carrier railroads under the requirements provided by General Order 22-B.

Part I - Summary of Reportable Accidents Occurring on Common Carrier Railroads

Part I consists of accident and injury information as reported on Federal Railroad Administration (FRA) Forms F 6180.54, 6180.55, and 6180.55a. This section includes non-train incident statistics. "The FRA Guide for Preparing Accident Reports" (Department of Transportation, 1997) provides the reporting guidelines.

Part II - Summary of Reportable Accidents Occurring at Highway - Rail Crossings

This section contains information on railroad crossing accidents as reported on FRA Form F 6180.57. These forms describe railroad crossing accidents and casualties. Railroad employee accident injuries or railroad property damage are reported on Forms F 6180.54, and 6180.55. The railroad companies also file these reports with the Commission.

Part III - Summary of Reportable Accidents Occurring on Rail Transit Systems

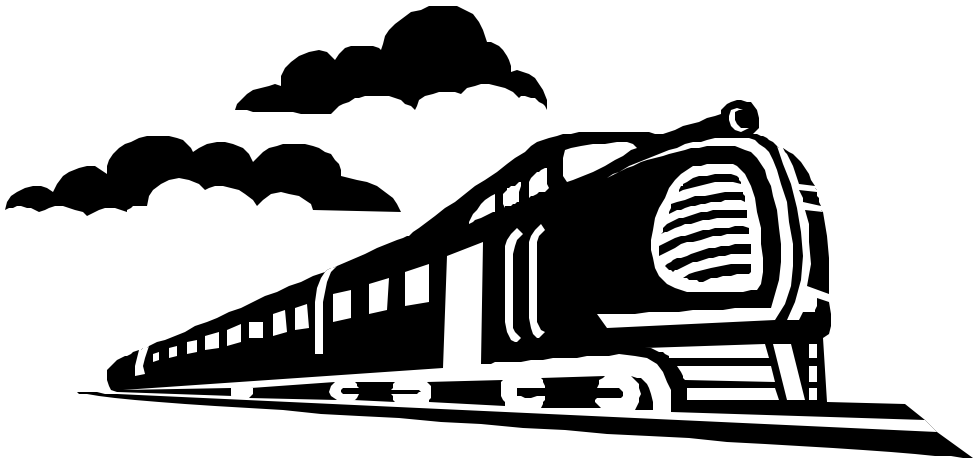
This section consists of information reported on the Commission's Rail Transit System Monthly Accident Report forms, Rail Transit Forms V and T.

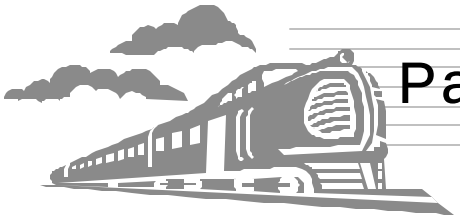
Public Use of Accident Reports

Section 315 of the Public Utilities Code in part provides:

"Neither the order or recommendation of the Commission nor any accident report filed with the Commission shall be admitted as evidence in any action for damages based on or arising out of such loss of life, or injury to person or property. Every public utility shall file with the Commission, under such rules as the Commission prescribes, a report of each accident so occurring of such kinds or classes as the Commission from time to time designates."

Summary of Reportable Accidents/Incidents Occurring on Common Carrier Railroads





Part I – Railroad Accidents

Introduction

Part I compiles accident/incident and casualty data reported by the railroads to the Commission and Federal Railroad Administration (FRA) for the 1999 calendar year. The train accidents reported to the Commission and the FRA by the railroads include collisions (excluding most grade crossing accidents), derailments, fires, explosions, natural disasters, and other events involving the operation of standing or moving on-track equipment. The train accidents reported in this part are subject to threshold reporting requirements set by the FRA.

Included in this section is further accident/incident data analysis covering specific occurrences, hazardous material releases, accidents by major causes and the statewide inspection program. In Appendix I, a number of tables give more detail as to the nature of accidents/incidents. Information includes accidents/incidents by railroad, damage costs, casualties and injuries to the different categorized railroad employees by railroad and categorized major injury causes, accidents by event circumstances, and others.

General Findings

In 1999, California railroads operated 31.49 million train miles, an increase of 7.5% over 1998. During 1999, the number of accidents/incidents increased from 150 in 1998 to 173 in 1999 (15% increase). Table 1 shows the train accident history and train mileage for the period 1990-1999.

Review of the train accident data for the last ten years shows that train accidents fall in two major categories, those that occur on the main track or siding and those at rail yards and industrial areas. For eight of the last ten years, less than 50% of the total train accidents reported occurred on the main or siding track. Since 1990, approximately 53% of all reportable railroad accidents in the state occurred at rail yards and industrial areas (see Appendix I-N).

Table 1 *- Ratio of Train Accidents to Miles Traveled (1990-1999)*

Year	Train Accidents*	Train Miles in Millions	Accidents Per Million Miles
1990	175	21.53	8.13
1991	163	21.03	7.75
1992	142	21.37	6.64
1993	138	21.55	6.40
1994	144	23.34	6.17
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1996	138	21.67	6.37
1997	123	25.63	4.80
1998	150	29.30	5.12
1999	173	31.49	5.49

* Train Accidents are those accidents meeting the threshold reporting requirements of FRA Form 54 which are collisions (excluding most grade crossing accidents), derailments, fires, explosions, natural disasters, and other events involving the operation of on-track equipment (standing or moving) and for 1998 and 1999 causing more than $6,600 of reportable damage.

The total annual dollar damage costs for train accidents in 1999 increased slightly by 3% from 1998.

For 1999, the total was $19,186,284, approximately $110,903 per train accident. Figure 1 depicts the total annual dollar damage costs and the damage cost per accident for the period 1990-1999 adjusted to 1990 dollars.

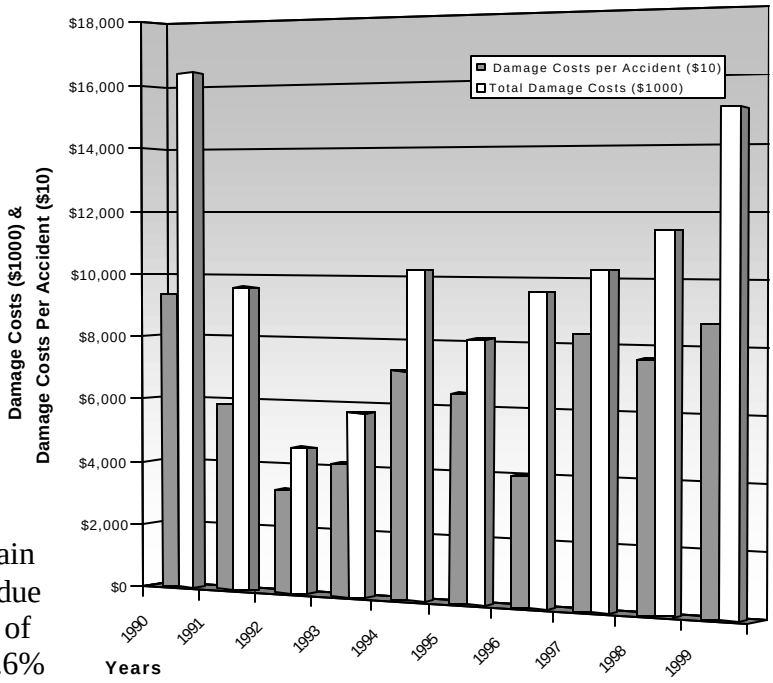


Figure 1 *– (1990-1999) Train Accident Damage Costs (1990$)*

Figure 2 shows the number of train and engine crew lost workdays due to injuries/illness. The number of lost workdays in 1999 increased by 8.6% over 1998 (See Appendix I-J and I-K for more information). Yet as shown in Table 2, the casualty rate of train and engine crew casualties per million train miles of 8.5 for 1999 is down from 9.1 in 1998.

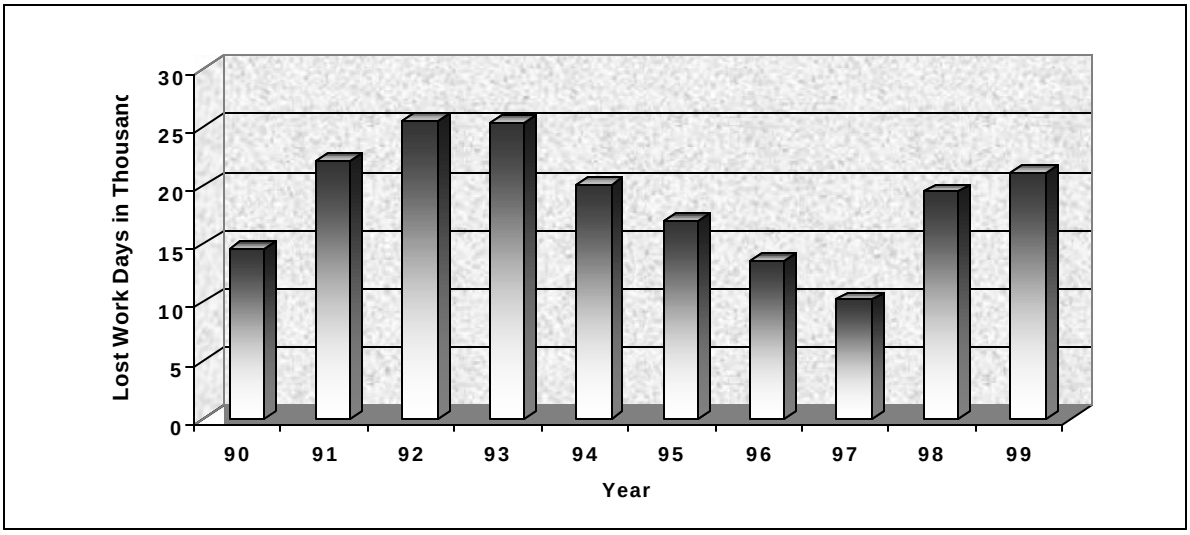
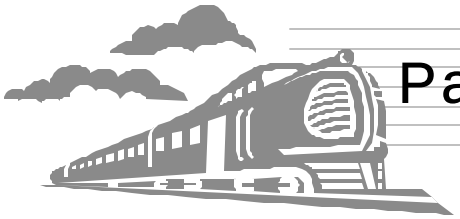


Figure 2 *- Train & Engine Crew Lost Work Days (1990-1999)*



Part I – Railroad Accidents

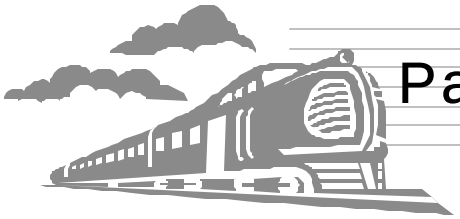
The 1999 number of train and engine employee casualties slightly increased to 268 from 266 reported in 1998. The casualty rate per million train miles for train and engine crew of 8.5 for 1999 is the second lowest in ten years. The lowest rate previously occurred in 1997 with a casualty rate of 7.8 per million train miles.

Table 2 *– Casualties to Train and Engine Crew (1990 –1999)*

Year	Train Miles in Millions	Casualties to Train and Engine Crew*			Casualty Rate per Million Train Miles
		Killed	Injured	Total	
1990	21.53	4	517	521	24.2
1991	21.03	0	451	451	21.4
1992	21.37	1	415	416	19.5
1993	21.55	2	397	399	18.5
1994	23.34	1	324	325	13.9
1995	26.21	1	256	257	9.8
1996	21.67	3	212	215	9.9
1997	25.63	1	200	201	7.8
1998	29.30	1	265	266	9.1
1999	31.49	1	267	268	8.5

* Any event connected with a railroad operation resulting in one or more of the following consequences must be reported on Form FRA F 6180.55a (FRA Guide for Preparing Accident/Incident Reports, U.S. Dept. of Transportation, 1997):

1. Death of a person within 365 calendar days of the accident/incident;
2. Injury to a person, other than a railroad employee, that requires medical treatment;
3. Injury to a railroad employee that requires medical treatment or results in restriction of work for one or more work days, the loss of one or more work days, termination of employment (as interpreted by FRA), transfer to another job, or loss of consciousness; or
4. Any occupational illness of a railroad employee.



Part I – Railroad Accidents

Ten Costliest Accidents

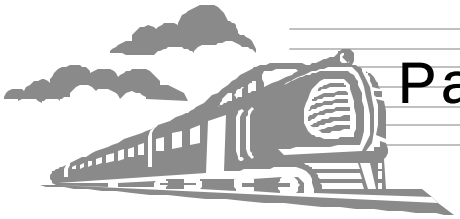
Table 3 lists the ten costliest accidents for 1999. These ten accidents accounted for $9,886,096 of the total $19.2 million in damages to railroad equipment and tracks. The reported costs do not include amounts for clearing wrecks from tracks, damage to lading, litigation, interruptions to operations, loss of business, or losses incurred by third parties.

The dollar damage of the ten train accidents ranged from $525,000 to $2.16 million. The causes of the accidents include track defects, tractor-trailer occupying the highway-rail crossing and being struck by train, debris on tracks and human error. The following section details some of the train accidents in 1999.

Table 3 *- Ten Costliest Train Accidents in 1999*

Railroad *	Date	County	Dollar Damage**	Injured	Killed	Reported Cause
UP	7/24	RIVERSIDE	$ 2,155,251	0	0	Track defect - joint bar broken
SCAX	11/18	ORANGE	$ 1,504,140	1	0	Human error - block signal failure to comply
ATK	10/22	RIVERSIDE	$ 1,262,750	7	0	Track defect - joint bar broken
UP	7/5	RIVERSIDE	$ 1,059,586	2	0	Human error - failure to stop train in clear
UP	8/17	IMPERIAL	$ 808,773	0	0	Track defect - track alignment irregular
UP	2/19	SAN BERNARDINO	$ 739,937	0	0	Train struck boulder in between rails
ATK	11/4	MONTEREY	$ 652,000	8	0	Train struck a trailer-truck on highway-rail crossing
BNSF	4/5	KERN	$ 645,000	0	0	Human error - improper train make-up
UP	7/31	SAN JOAQUIN	$ 533,659	0	0	Track defect - horizontal split head
ATK	11/21	MERCED	$ 525,000	0	0	Train struck a piece of rail
Total			**$ 9,886,096**	**18**	**0**	

***** See glossary for definitions of railroad abbreviations.
** Severity based on dollar damage.



Part I – Railroad Accidents

Specific Occurrences

Staff performs comprehensive investigations on specific railroad accidents occurring in California. The investigation process includes examining all pertinent evidence at the accident site, including positions of derailed equipment, marks on tracks or ties, signs of equipment defects, and speed tapes from the locomotives. It also involves interviewing train crews, analyzing taped conversations between train crews and dispatchers, witnessing signal tests, brake tests and accident-condition/train simulations. Once an accident cause is identified, staff works with the railroads and labor organizations to establish mitigating measures to prevent a recurrence of that type of accident.

Tweedy Yard Derailment

On January 14, 1999, a UP train crew was switching at Tweedy Yard in Los Angeles. A conductor with 30 years service stepped into the "hot zone" in order to secure a cut of cars with a handbrake. While performing this task, an additional cut of cars were shoved onto the track, striking the employee and severing his right leg at mid-calf. The cause was determined to be the failure to ensure that all movement on the affected track was stopped. Staff recommended a safety blitz by railroad management with personal contact with all employees. Railroad complied with recommendations.

Hobart Tower

On February 3, 1999, a UP operator at Hobart Tower in Los Angeles verbally authorized a Metrolink commuter train to pass a signal displaying stop after aligning a freight train through a conflicting track junction in front of the commuter train. The engineer of the Metrolink train saw the UP freight train movement and was able to stop without incident before colliding. The cause was found to be a human factor rule violation—the tower operator failed to ensure the route was aligned and clear of opposing movement. Staff recommended retraining of the control operator, as well as safety contacts with other operators. UP complied with the recommendation.

Lugo

February 20, 1999, a UP train crew was attempting to operate a train that had been parked at Lugo (backlog was due to a derailment that occurred the day before at Frost). As the train commenced movement on an ascending grade, the train crew reported a loss of train line air. Upon inspection it was determined that a knuckle (car coupler) had broken on one car and then a drawbar (car coupler extension) was broken on another car. This last break allowed the rear five cars to separate and roll backwards, impacting a standing BNSF freight train. The primary

cause was a human factor error -improper train handling.

Staff recommended retraining of locomotive engineer through peer counseling, and safety contacts made with other engineers on proper train handling on ascending grades. UP complied with staff's suggestions.

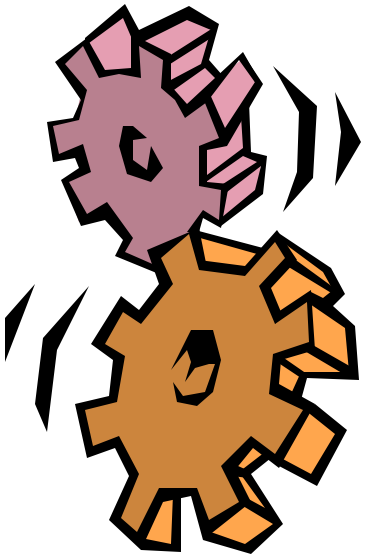
Del Mar

On March 12, 1999, at 5:22 p.m., a San Diego Northern "Coaster" train number 642 failed to stop short of a red signal governing movement over the main track at the east end of the Del Mar siding and struck the rear car of Coaster train number 641 heading into the siding ahead. The cause was determined to be the failure of the engineer to stop at the red signal. Staff recommended procedures requiring all Coaster train engineers to communicate all signal aspects to conductors by radio. Therefore, if conductor receives no communication from the engineer, he would be required to stop the train. The railroad complied with the recommendation.

Acampo Derailment

On April 23, 1999, an eastbound Union Pacific Railroad freight train derailed six tank cars on the passing track at the Acampo Station on the Roseville Service Unit, Fresno Subdivision, mile post 68.8. The preliminary investigation revealed the first car to derail was the 39th car from the rear end of the train, which contained methanol. One hazardous material car containing Methanol sustained minor leakage (estimated one quart) originating from the vapor relief valve mounted on the manway cover. The cars were re-railed and pulled from the accident site.

There was no evacuation, no injuries and/or fatalities associated with this derailment. The primary cause of this derailment was determined to be caused by bad tie conditions, which allowed the rails to spread.



Pittsburg Derailment

On April 27, 1999, at approximately 7:45 a.m., a Burlington Northern Santa Fe Railway Company freight train derailed six cars in the Pittsburg Train Yard on the Stockton Subdivision within the city limits of Pittsburg.

The train with 27 cars and 10 locomotives originated at Richmond and was destined for Barstow. While pulling through the Pittsburg Yard, at approximately eight miles per hour, the 13th through the 18th cars derailed. Although three of those cars contained hazardous materials (liquid petroleum gas), there were no releases and/or spills and there were no injuries or fatalities as a result of this derailment. Accident damage was estimated at $101,000 and $21,500 to track and cars, respectively.

The probable cause was determined to be an improperly adjusted switch, compounded by the train traversing out of and into two turn outs.

Pittsburg Derailment Transfer Track

On April 29, at approximately 11:45 a.m., a BNSF yard job derailed three cars in the Pittsburg train yard, at milepost 1156.3 on the Stockton Subdivision, Northern California Division, within the city limits of Pitttsburg, California. Hazardous materials were involved.

The train crew was conducting a switching movement in the Pittsburg yard, when the trailing trucks on the eighth car failed to negotiate the 22-degree turn out. This caused the outside rail to turn over and derailed three loaded cars of liquid petroleum gas (LPG). There were no leaks, spills or injuries/fatalities as a result of the derailment.

The carrier determined there was $5,200 damage to equipment and $6,000 damage to the track. The yard track was cleared by 8:35 p.m. The cause was determined to be a mechanical failure on the eighth car. After the April 27th and 29th yard derailments, BNSF did considerable track work in the yard.

Los Angeles Incident

On June 17, 1999, a UP train crew was operating eastbound at 20 mph from Los Angeles to Alhambra on track 2 after receiving permission from the yardmaster. An *opposing* UP train was operating westbound at 13 mph from the City of Industry to Los Angeles on track 2 in the Los Angeles shop yard after also receiving permission from the yard master, via the train dispatcher. Neither train knew of the other's movement until each saw the other's headlight. Assuming that a collision was imminent, three of the employees were injured after jumping from one of the trains. The trains stopped 57 feet apart from each other.

The cause was determined to be Human Factors when the yard master failed to notify train crews of opposing movements. Staff recommended retraining of the yard master as well as safety contacts with other operating personnel concerning the incident. UP complied with the recommendation.

Redding Employee Fatality

On June 23, 1999, a UP train crew was switching in the yard at Redding. The conductor had positioned himself in the "hot zone" near eight stationary cars and, via radio, directed the engineer to shove 24 additional cars onto the track to couple to the standing eight cars. When the movement slowed, then stopped, the conductor directed the brakeman to inspect the 24 cars to determine if any brakes were applied. The brakeman discovered a closed brake pipe valve within the 24 cars and opened it. This action released immediately the

brakes and caused the cut of cars to resume movement. The brakeman attempted to call the conductor and inform him of what he had found but received no response to repeated calls. After the movement was stopped, the brakeman found the conductor fatally injured, having been pinned between the couplers of the moving and standing cars.

Staff recommended that the railroad management conduct a safety blitz and personally contact all employees. UP complied with the recommendation and also produced a safety video concerning the incidents of January 14, 1999 and June 23, 1999.

Devore Unintentional Release

On June 27, 1999, a UP train crew was operating a 54-car train from Yermo to Los Angeles. As it approached Devore, the train experienced an unintentional brake release and the engineer immediately placed the train brakes in emergency. A road foreman of engines and mechanical forces was dispatched to the scene, but could only find a small air leak approximately 20 cars from the rear of the train.

The cause was found to be the failure of the engineer to follow proper procedures regarding the use of the automatic brake valve. Staff recommended retraining of the locomotive engineer, including operating time with a peer supervisor, and that safety contacts be made with other engineers on the rules governing use of the automatic brake valve. The railroad complied with the recommendation.

Palm Springs Collision

On July 5, 1999, a westbound UP train crew failed to stop their train at a red control signal at Palm Springs. This failure resulted in a head-on collision with an opposing train that was operating eastbound and was about to enter the siding. Three employees were injured as a result of this collision.

The cause of this collision was Human Factors in the form of failure to comply with a signal requiring the train to stop. Staff recommended that the railroad management conduct more efficient and site specific efficiency testing. UP complied with the recommendation.

Source: < www.trainweb.com>

***Photo 1**- Track testing*

Ludlow Derailment

On October 16, 1999, Amtrak train No. 3, Southwest Chief, derailed 4 cars at 2:54 a.m. east of Ludlow following an earthquake, which caused the rails to spread. The cause was considered an "Act of God" and no recommendations were made.

Cathedral City Derailment

On October 22, 1999, Amtrak train No. 1, Sunset Limited, derailed 14 cars at the Rimlon East Switch (near Cathedral City). All cars remained upright but there were injuries to three passengers and one employee.

The derailment was caused by a broken rail 36 feet east of point of derailment. Staff recommended that more precise detection equipment be used to detect cracks underneath the rail connectors. The railroad complied with the recommendation.

Fullerton Collision & Derailment

On November 18, 1999, at 8:15 a.m., an eastbound Metrolink commuter train, No. 602, sideswiped a westbound BNSF freight train, as the freight train was crossing over from track No. 2 onto track No. 1 near Fullerton.

The collision resulted in the derailment of one locomotive and one coach on the Metrolink train, and five freight cars on the BNSF train, causing a fire on the engine. Nineteen passengers and crewmembers were injured and were taken to various area hospitals. The National Transportation Safety Board's investigation is in progress with staff participation.

Among Staff's recommendations were:

- a joint operational efficiency testing program,
- a procedure that makes dispatchers reroute commuter trains to eliminate complacent behavior due to seeing the same signal day after day, and
- a rule that when engineers write any instructions they must stop their train.

Metrolink, Burlington, Northern & Santa Fe, and Union Pacific Railroad companies complied with the recommendations.

Torrance Derailment

On November 30, 1999, a BNSF train derailed six container cars in Torrance. All the derailed cars remained upright, but five of the cars struck a bridge, causing minor damage to the structure. One derailed car was improperly labeled "poisonous."

The cause was determined to be a defective switch. Staff recommended more frequent track and switch point inspection after heavy rain. The railroad complied with the recommendations.

Source: < www.trainweb.com>

Photo 2 - Fullerton Collision & Derailment

Colfax Derailment

On December 12, 1999, a Union Pacific Railroad derailed train MRVRO6-11 (Roper to Roseville) at milepost 151.3, west of Gold Run. Eight cars were derailed; two tank cars had residue hazardous material. Both tank cars came to rest on their sides, perpendicular to and across the tracks.

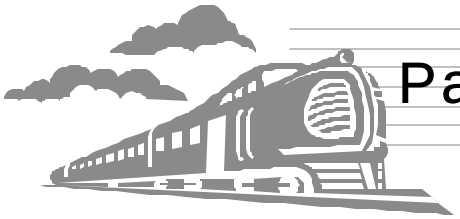
The train was descending a 1.8- percent grade at the time of the derailment. Damage estimates were $182,000 to equipment and $50,000 to track.

The cause of the derailment was contributed to a mechanical failure on an empty gondola car, which caused the car to climb the rail and derail. The car was dragged on the ground unnoticed for approximately 1.6 miles before derailing the other seven cars and coming to a rest in a general pile up.

Currently, CPUC Rail Safety Staff are working with Union Pacific Railroad officials on mechanically caused derailments.

Source: < www.trainweb.com>

Photo 3 - Redondo Roundhouse



Hazardous Materials

Tables 4 and 5 summarize train accidents involving hazardous materials in California, as reported to the FRA. The number of derailed or damaged cars, as shown in Table 4, decreased from 52 cars in 1998 to 44 cars in 1999 (15% decrease). The number of derailed or damaged cars per 10 million train miles traveled, as shown in Table 5, decreased from 17.75 in 1998 to 13.97 in 1999 (21% decrease). While train accidents involving hazardous materials increased in 1999, four accidents resulted in a release of hazardous materials with nine evacuations.

Table 4 *- Hazardous Materials Train Accident Total (1990-1999)*

Year	Number of Accidents	Cars Carrying Hazardous Materials	Damaged or Derailed	Releases*	Evacuated	Injured	Killed
1990	26	94	46	3	43	1	0
1991	27	106	37	3	300	53	0
1992	28	103	40	0	100	1	0
1993	31	231	34	0	30	6	2
1994	38	288	50	6	0	7	0
1995	28	215	66	1	200	2	0
1996	33	186	53	7	54	1	2
1997	19	101	23	0	35	0	0
1998	30	211	52	1	0	3	0
1999	38	295	44	4	9	2	4**

* Releases due to derailments, collisions and fires as reported on FRA Form 54.

** Accident was at highway-rail grade crossing, not due to hazardous material exposure, no train crew casualites.

Table 5 *- Hazardous Materials Train Accident Rate (1990-1999)*

Year	Accidents per 10 Million Train Miles	Cars Carrying Hazardous Material per 10 Million Train Miles	Cars Damaged or Derailed per 10 Million Train Miles	Releases per 10 Million Train Miles -
1990	12.08	43.66	21.37	1.39
1991	12.83	50.40	17.59	1.43
1992	13.10	48.20	18.78	0.00
1993	14.39	107.19	15.78	0.00
1994	16.30	123.60	14.57	2.57
1995	10.68	82.03	25.18	0.38
1996	15.24	85.87	24.47	3.23
1997	7.41	39.41	8.97	0.00
1998	10.20	70.20	17.75	0.34
1999	12.07	93.68	13.97	1.27

- Releases due to derailments, collisions, or fires as reported on FRA Form 54.

Other data sources give more information about the transportation of hazardous materials by rail. For example, the Environmental Protection Agency's (EPA) Emergency Response Notification System (ERNS) was notified of 71 chemical releases in California due to transportation by rail. Table 6 and Figure 3 are based on the initial notifications documented by the EPA's ERNS database for 1995 through 1999 for railroads, and other transportation means, and by substances. ERNS reports fall into three major categories: substances designated as hazardous under the CERCLA (Comprehensive Environmental Response, Compensation, and Litigation Act of 1980), as amended; oil and petroleum products, as defined by the Clean Air Act of 1972, as amended by the Oil Pollution Act of 1990; and all other types of materials. The use of data supports emergency response planning efforts, and assist decision makers in developing spill prevention programs. Another data source includes notifications from the Governor's Office of Emergency Services 24-Hour Warning Center (OES). For 1999, there were 113 OES notifications of incidents involving hazardous material.

The reported number of initial hazardous materials notifications reported to OES versus the number of incidents to the FRA varies due to the different threshold reporting requirements.

Table 6 shows an increase in hazardous materials releases by rail from 65 in 1998 to 71 in 1999. There has been a 38% decrease in reported hazardous materials releases since 1995 for rail. Figure 3 compares the percentages of total releases by transportation mode.

PU Code Section 765.5(d) requires the Commission to dedicate sufficient resources to implement the State Participation Program, regulating the rail transportation of hazardous materials as authorized by the Hazardous Material Uniform Safety Act of 1990 (P.L. 101-615). Accordingly, the FRA has certified three Commission staff members as hazardous materials inspectors. These inspectors conduct a variety of activities, including analysis of incidents reported from the OES, field inspections incidental to the notifications, and recommendations to prevent recurrences of incidents.

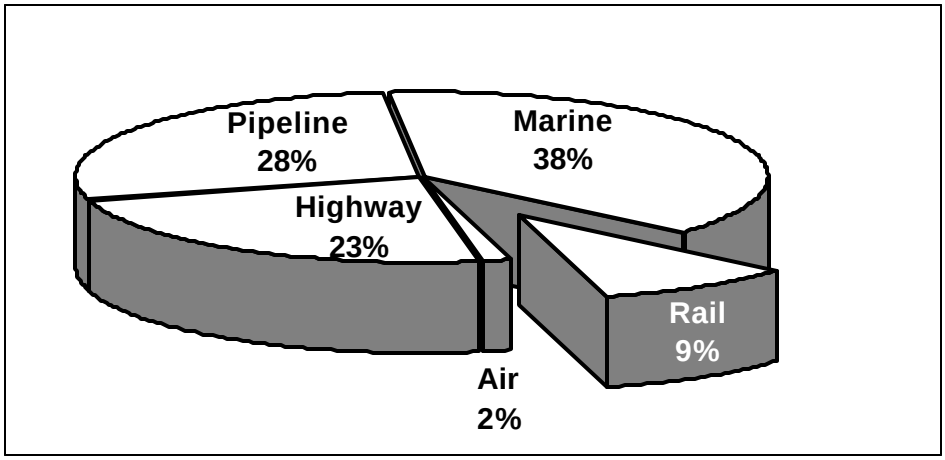


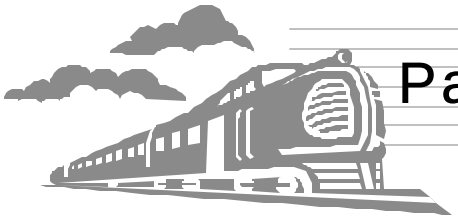
Figure 3 *- Total Hazardous Material Releases by Transportation Mode-ERNS Data (1995-1999)*

Table 6 *- Hazardous Material Releases by Transportation Mode (1995-1999)*

Mode	Year	Oil[1]	CERCLA[2]	EHS/OTHER[3]	Total
Rail	1995	55	30	29	114
	1996	38	39	0	77
	1997	58	36	18	112
	1998	41	20	4	65
	1999	46	21	4	71
	Total	***238***	***146***	***55***	***439***
Highway	1995	210	36	32	278
	1996	231	50	1	282
	1997	142	37	27	206
	1998	121	24	15	160
	1999	133	28	19	180
	Total	***837***	***175***	***94***	***1,106***
Pipeline	1995	186	4	3	193
	1996	306	10	2	318
	1997	267	12	22	301
	1998	251	7	18	276
	1999	230	1	11	242
	Total	***1,240***	***34***	***56***	***1,330***
Marine	1995	322	2	2	326
	1996	375	6	0	381
	1997	322	8	69	399
	1998	335	0	4	339
	1999	363	2	10	375
	Total	***1,717***	***18***	***85***	***1,820***
Air	1995	15	2	2	19
	1996	15	0	0	15
	1997	9	1	1	11
	1998	9	0	1	10
	1999	14	0	3	17
	Total	***62***	***3***	***7***	***72***

Source: Emergency Response Notification System (ERNS- are initial notifications and may be subject to change.)

1. Oil: Oil and petroleum products, as defined by the Clean Water Act of 1972, as amended by the Oil Pollution Act of 1990, such as diesel fuels, lubricating oils, and gasoline.
2. CERCLA: A list of 775 environmentally hazardous chemicals designated by the Comprehensive Environmental Response, Compensation and Litigation Act of 1980. This table is based on the Chemical Table from Title 40 CFR, Part 302.4 of November 1990.
3. EHS: This category includes chemicals regulated as Extremely Hazardous Substances under EPCRA Section 302 excluding those chemicals also regulated as hazardous substances under CERCLA. In 1997, classifications changed with third category designated as"Other."



Part I – Railroad Accidents

Causes of Accidents

There were 173 train accidents in 1999. The leading reported cause was "Train Operation - Human Factors," accounting for 35.3% of the total accidents. Table 7 catalogs the major causes for the 1999 train accidents. The following tables list categories for each cause. Table 8 gives greater detail of such incidents within this category. "General Switching Rule" was the leading cause of train accidents for train operations. The "General Switching Rule" cause includes a number of violations of the General Code of Operating Rules adopted by the major railroads

Table 7 *- Train Accidents By Reported Causes 1999*

Cause	Number of Accidents	% of Total Train Accidents	% of Total $ Damage
Train Operations – Human Factors	61	35.3	31.1
Track, Roadbed and Structure	59	34.1	41.2
Miscellaneous	43	24.9	21.4
Mechanical and Electrical Failure	10	5.8	6.3
Total	**173**	**100**	**100**

Table 8 *- Train Accidents: Train Operation - Human Factors Causes 1999*

Category	Number of Accidents	Dollar Damage $	% of Human Error Accidents	% of Total Train Accident Causes	% of Total $ Damage
Brakes, Use of	2	45,600	3.3	1.2	0.2
Employee Physical Condition	0	-	0.0	0.0	-
Flagging, Fixed, Hand and Radio Signals	4	1,800,254	6.6	2.3	9.4
General Switching Rule	26	772,810	42.6	15.0	4.0
Main Track Authority	1	1,059,586	1.6	0.6	5.5
Train Makeup & Handling	10	1,155,667	16.4	5.8	6.0
Speed, Excessive	3	123,824	4.9	1.7	0.6
Use of Switches	12	473,094	19.7	6.9	2.5
Other	3	527,743	4.9	1.7	2.8
Total	**61**	**$ 5,958,578**	**100**	**35.3**	**31.1**

The average dollar damage estimate for human factor causes per accident was $97,682.

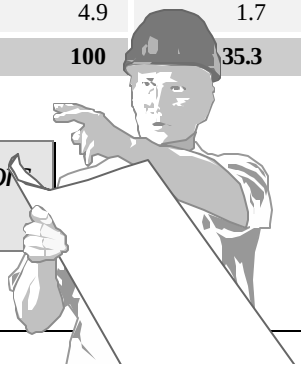
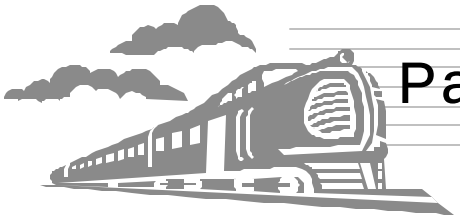


Table 9 lists accidents with "Track, Roadbed, and Structure Causes." The total for this category was 34.1% of all train accidents. Most of these accidents involved track geometry.

Table 9 *- Train Accidents: Track, Roadbed and Structure Causes 1999*

Category	Number of Accidents	Dollar Damage($)	% of Track Causes	% of Total Train Accident Causes	% of Total $ Damage
Roadbed Defects –	3	29,297	5.1	1.7	0.2
Track Geometry – Wide Gage	18				
Other	5				
Subtotal	23	2,220,428	39.0	13.3	11.6
Rail and Joint Bar Defects – Broken Rail	8				
Other	7				
Subtotal	15	4,496,276	25.4	8.7	23.4
Switches, Turnouts & Track Appliances – Switches	12				
Other	4				
Subtotal	16	1,102,682	27.1	9.2	5.7
Signal and Communication	2	53,946	3.4	1.2	0.3
Other	0	-	0.0	0.0	-
Total	**59**	**$ 7,902,629**	**100**	**34.1**	**41.2**

The average dollar damage estimate for track, roadbed, & structure cause per accident was $133,943.



Part I – Railroad Accidents

The next leading cause category was "Miscellaneous Causes," making up 24.9% of all train accidents (Table 10). Within this category, the "Highway-rail grade crossing accidents" had the highest frequency.

The Mechanical and Electrical Failure category accounted for 5.8% of all train accidents (Table 11). Within this category, "Truck Components" failures resulted in the greatest damage.

See "Statewide Inspection Programs," at the end of Part I (page 20), for information regarding the staff's efforts to improve railroad safety in California.

Table 10 *- Train Accidents: Miscellaneous Causes 1999*

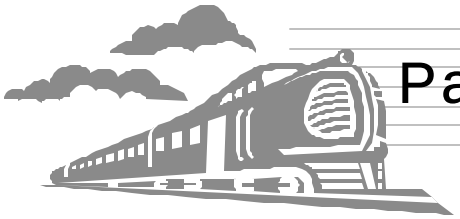
Category	Number of Accidents	Dollar Damage $	% of Miscellaneous Causes	% of Total Train Accident Causes	% of Total $ Damage
Unusual operational situations including fire, interaction of lateral & vertical forces, object fouling tracks.	12	2,119,112	27.9	6.9	11.0
Environmental conditions.	1	309,800	2.3	0.6	1.6
Highway-rail grade crossing accidents (involving rail equipment damage over the reporting threshold).	19	1,315,577	44.2	11.0	6.9
Vandalism	5	97,303	11.6	2.9	0.5
Loading Procedure (load shifting, overloaded car)	3	209,000	7.0	1.7	1.1
Other	3	64,218	7.0	1.7	0.3
Total	**43**	**$ 4,115,010**	**100.0**	**24.9**	**21.4**

The average dollar damage estimated for miscellaneous causes per accident was $95,698.

Table 11 *- Train Accidents: Mechanical and Electrical Failure Causes -1999*

Category	Number of Accidents	Dollar Damage $	% of Mechanical Causes	% of Total Train Accident Causes	% of Total $ Damage
Brakes	0	-	0.0	0.0	-
Trailer or COFC	0	-	0.0	0.0	-
Body	1	23,903	10.0	0.6	0.1
Coupler & Draft System	0	-	0.0	0.0	-
Truck Components	6	783,595	60.0	3.5	4.1
Axles and Journal Bearings	0	-	0.0	0.0	-
Wheels	3	402,569	30.0	1.7	2.1
Locomotives	0	-	0.0	0.0	-
Other	0	-	0.0	0.0	-
Total	**10**	$ 1,210,067	**100**	**5.8**	**6.3**

The average dollar damage estimated for mechanical & electrical failure causes per accident was $121,007.



Part I – Railroad Accidents

Statewide Inspection Programs

The Railroad Operations and Safety Section includes FRA- certified inspectors in five disciplines: track, motive power and equipment, signal and train control, operating practices, and hazardous materials.

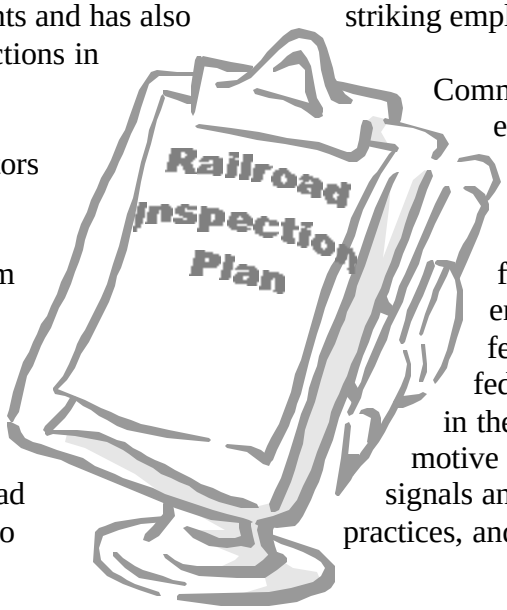
In calendar year 1999, staff inspected 21,132 units of equipment and 9,338 miles of track. In addition, staff conducted 233 inspections of facilities that handle hazardous materials, 2,014 inspections related to train movement operating rules, and 3,139 inspections of signal and train control systems. Staff also handled 139 complaints from railroad employees and the general public.

The State Railroad Inspection Plan contains a schedule of inspection points for each month, and each railroad, so that all main line track is inspected at least once a year, and all locomotive, equipment, and facilities in Class I railroad yards are inspected at least once every six months. For 1999, staff fulfilled the plan requirements and has also conducted significant inspections in other areas.

Hazardous materials inspectors work with the FRA and the Bureau of Explosives, periodically conducting team inspections, and training shippers and consignees of hazardous materials shipments. Staff inspections also involve unannounced visits to railroad yards and shipper facilities to examine shipping papers, car placarding, and markings of dates on containers/portable tanks and railroad stock.

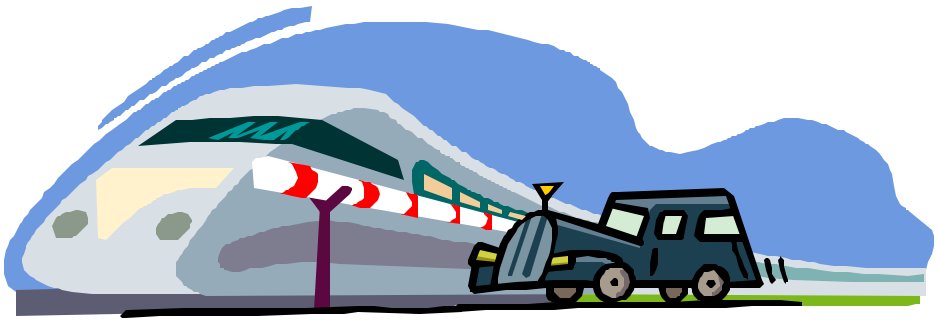
Operating Practices Inspectors participate with railroad officials in operational rule testing of operating personnel. Such testing monitors the adequacy of employee responses, and diagnoses rule and operational problems before such problems pose risk to employees and the public. Additionally, federally certified staff inspectors audit the railroad for compliance with federal and state regulations.

For example, the high frequency of on-the-job "slipping injuries" (Appendix I-J) identifies the need for compliance with the Commission's General Order 118, which prescribes safety standards for railroad employee walkway surfaces. General Order 26-D prescribes safety standards for employee working spaces adjacent to the tracks, to reduce the risk of equipment striking employees.



Commission staff also addresses employee and public safety with its train accident prevention programs, including the Commission's federal/state inspection and enforcement programs. These federal/state programs include federal regulation enforcement in the five major disciplines: track, motive power and equipment, signals and train control, operating practices, and hazardous materials.

Summary of Accidents/Incidents Occurring on Highway-Rail Grade Crossings as Reported by Common Carrier Railroads



Part II –Crossing Accidents

General Findings

The Federal Railroad Administration received 334 rail accident reports (excluding rail transit) involving the general public during 1999. Table 12 lists accidents at highway-rail public and private grade crossings and accidents involving trespassers.

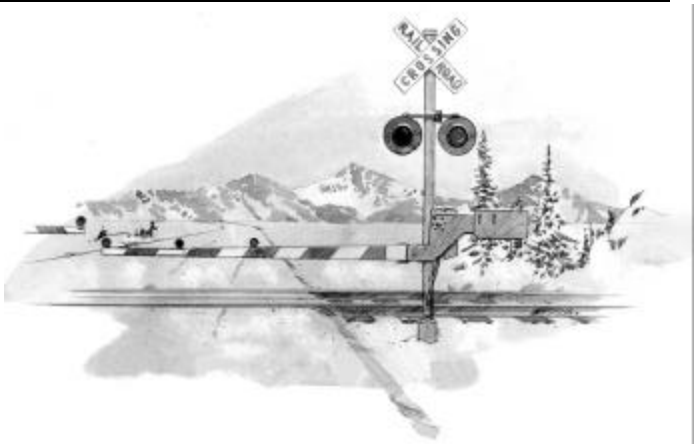


***Table 12** - Types of Accidents – 1999*

Type of Accident	Accidents		Casualties			
	Total	% of Total	Killed	Injured	Total	% of Total
Grade Crossing Accidents*						
Vehicle-Train at Public Crossings	156	46.7	10	55	65	28.6
Vehicle-Train at Private Crossings	29	8.7	5	8	13	5.7
Miscellaneous	6	1.8	2	4	6	2.6
Pedestrian Accidents**	13	3.9	7	6	13	5.7
Subtotal	204	61.1	24	73	97	42.7
Between Crossings						
Trespasser***	130	38.9	86	44	130	57.3
Total	334	100	110	117	227	100

"Vehicle" includes automobile, bus, van, truck-trailer, truck, or motorcycle.
"Miscellaneous" includes those accidents at public and private crossings where the train struck a bicycle.
“Trespasser” includes those persons who are on railroad operating property, and whose presence is prohibited, forbidden, or unlawful.

* Grade Crossings are intersections of a street, road, highway with a railroad track(s) when both are at the same elevation.

** Includes incidents/accidents at private and public crossings.

*** Figure 6 offers a ten-year comparison of trespasser casualty data.

Part II –Crossing Accidents

Figure 4 graphically depicts Table 12 data, showing the number of accidents by type of occurrence. Trespasser accidents accounted for 38.9% of all accidents and 57.3% of all the casualties. The total highway vehicle monetary damage for all grade crossing accidents was reported as $773,450, with only 1% of the accident reports not specifying a damage amount.

Table 13 represents the history of vehicle versus train accidents at public crossings for the last ten years. In 1999, there was a 2% increase in the total number of vehicle-train accidents compared with the previous year. This includes an 8% decrease in vehicle-freight train accidents, but a 36% increase in vehicle-passenger train accidents. Passenger train accidents involve those occurring on both commuter and Amtrak service lines. Commuter service includes *Caltrain* in the San Francisco Peninsula, *Altamont Commuter Express* in the Central Valley, *Metrolink* and *Coaster* in Southern California.

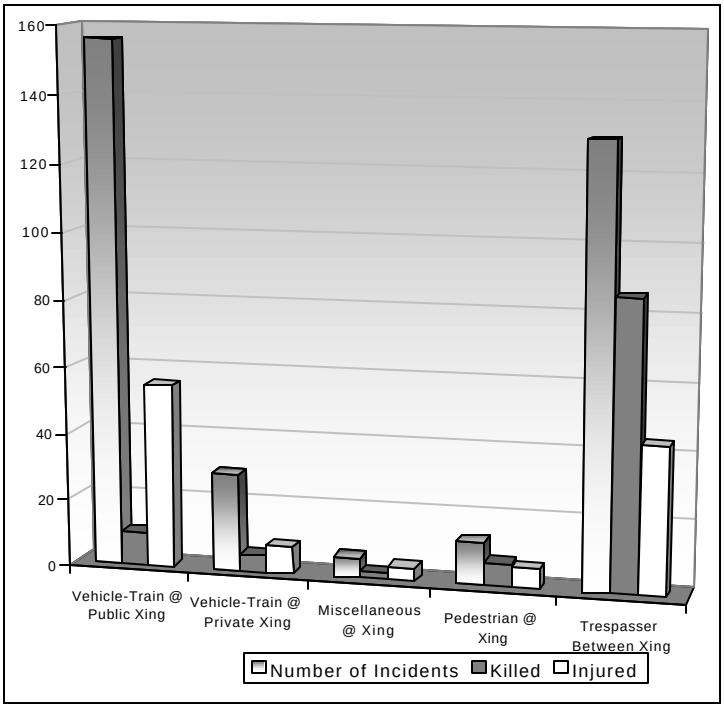


Figure 4 *– Types of Accidents – 1999*

Table 13 *- Passenger & Freight Train vs. Vehicle Accidents at Public Crossings (1990-1999)*

Year	Vehicle-Train Accidents				
	Passenger	Freight	Total	Killed	Injured
1990	25	149	174	30	66
1991	13	180	193	23	78
1992	20	120	140	16	50
1993	28	124	152	29	37
1994	22	141	163	22	43
1995	34	122	156	16	50
1996	12	142	154	9	41
1997	21	105	126	9	32
1998	25	133	153	21	39
1999	34	122	156	10	55

Part II –Crossing Accidents

Figure 5 depicts the number of vehicle-train accidents involving passenger and freight trains at public crossings from 1990 through 1999. The data for Figure 5 is listed in Table 13. The number of freight train-vehicle accidents has been decreasing overall in the last ten years.

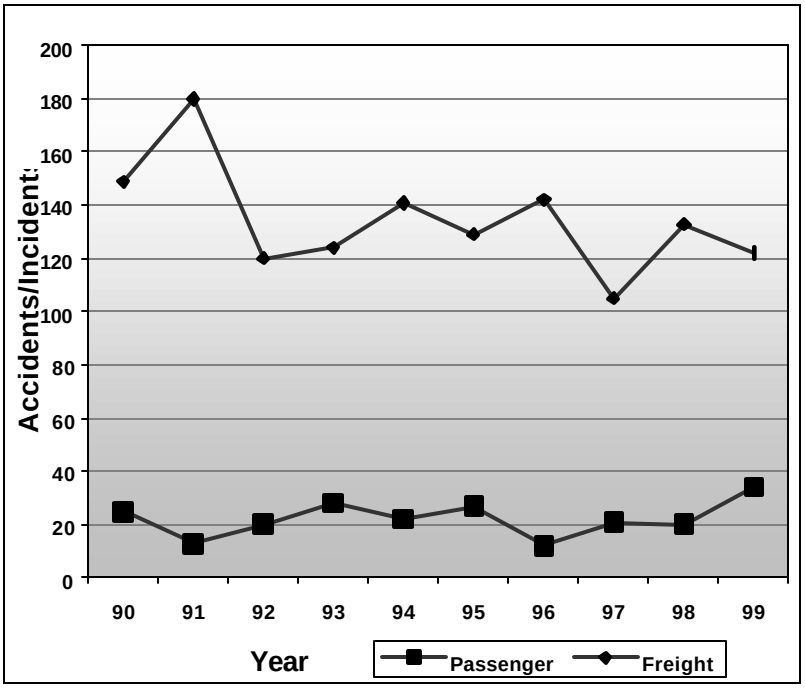
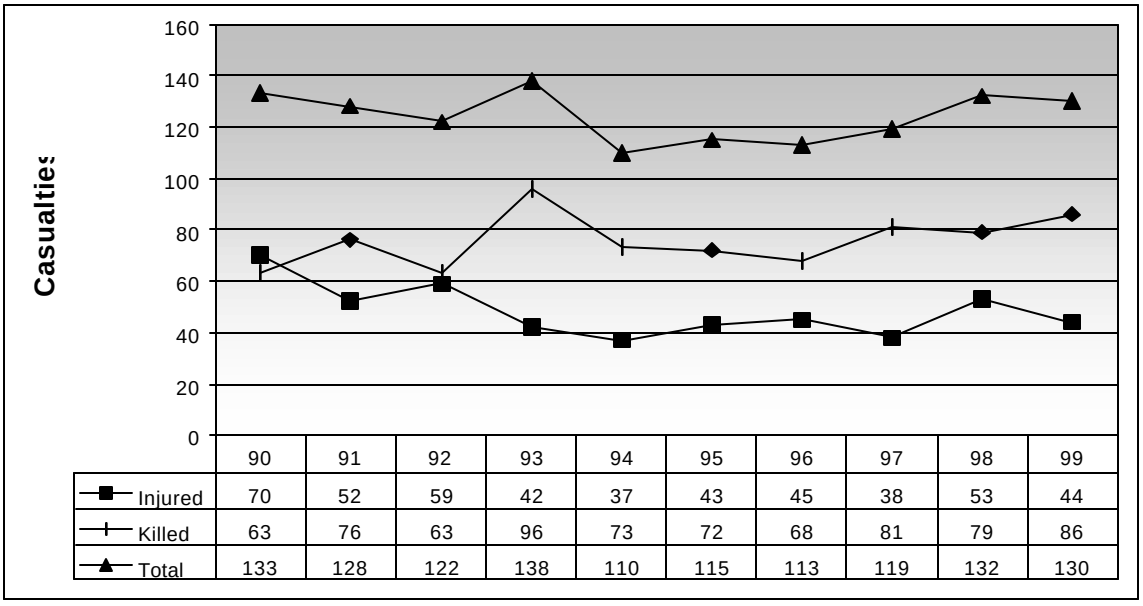


Figure 5 *- Number of Vehicle-Train Accidents at Public Crossings by Train Type (Passenger & Freight 1990-1999)*

The total number of trespasser accidents decreased by approximately 2% from last year, but the number of trespassers killed in 1999 increased by 9% as shown in Figure 6. These trespasser accidents did not occur at grade crossings.



	90	91	92	93	94	95	96	97	98	99
Injured	70	52	59	42	37	43	45	38	53	44
Killed	63	76	63	96	73	72	68	81	79	86
Total	133	128	122	138	110	115	113	119	132	130

Figure 6 *- Trespasser Casualties (1990-1999)*

Part II –Crossing Accidents

Factors Affecting Driver Action

Table 14 lists vehicle train accidents by driver action at public highway-rail grade crossings. The most common mistake made by motorists in 1999 was "Stopped, but did not clear track" causing a total of 57 accidents. The highest percentage of casualties occurred from failing to stop at a highway-rail crossing.

Individuals may be unaware of a train's inability to effectively avoid collisions at crossings. It takes an average freight train traveling 30 mph over one half mile to stop, and about a mile and a half at 60 mph. These stopping distances make it impossible for trains to avoid collisions with vehicles or pedestrians on or near the tracks.

For "Drove behind or in front of passing train, and struck by second train," a motorist may mistakenly believe it is safe to proceed after the train clears a multi-track highway-rail grade crossing, when in fact, a second train may be approaching. In 1999, in four separate incidents, a second train struck the motorists as they drove behind or in front of a passing train, resulting in one fatality and two injuries.

Table 14 *- Vehicle Train Accidents at Public Crossings by Driver Action 1999*

Driver Action	Accidents		Casualties			
	Total	% of Total	Killed	Injured	Total	% of Total
Drove behind or in front of passing train, and struck by second train	4	2.6	1	2	3	4.6
Failed to stop	45	28.8	3	15	18	27.7
Drove around or through gates	23	14.7	4	11	15	23.1
Stopped but did not clear track	57	36.5	0	17	17	26.2
Vehicle stalled on track	20	12.8	1	7	8	12.3
Passed standing vehicle	1	0.6	0	1	1	1.5
Vehicle stopped and then proceeded	4	2.6	1	2	3	4.6
Vehicle trapped at crossing	1	0.6	0	0	0	0.0
Other	1	0.6	0	0	0	0.0
Total	**156**	**100**	**10**	**55**	**65**	**100**

Part II –Crossing Accidents

Accident Examples

In 1999, there were 334 railroad accidents involving the general public. One hundred fifty-six of these accidents occurred at public crossings, resulting in 10 fatalities. Twenty-nine involved vehicle-train accidents at private crossings, 13 were pedestrian crossing accidents, 6 bicyclists and 130 involved trespasser accidents between crossings. Appendix II-B shows that 87% of vehicle-train crossing accidents at public crossings occurred during clear weather.

The examples that follow are from newspaper accounts that illustrate typical accident causes. They provide a background to the statistics contained in this part of the report to assist in better understanding crossing and trespasser incidents.

Accident Summary

The majority of the 1999 accidents that are summarized below occurred during clear weather and on dry roads. Most of the accidents were attributed to the motorist's or pedestrian's disregard of warning devices, inattentiveness, or other vehicle code violations.

Union Pacific – Acton: On July 28, 1999, an Union Pacific freight train struck an abandoned vehicle at 4:00 a.m. There were no injuries and the tracks were cleared 90 minutes later. The collision did disrupt Metrolink commuter service between Lancaster and Los Angeles, which was delayed 45 minutes.

Caltrain – San Jose: On August 31, 1999 at approximately 6:30 a.m., a driverless tractor-trailer was struck by a San Francisco bound commuter train. The soda delivery trailer became high centered at the Richmond Avenue and Monterey Road at-grade crossing. Of the approximately 160 passengers, twenty-five were treated at the scene and released and another twelve were transported to area hospitals with minor injuries.

Amtrak – Salinas: On November 4, 1999 at 5:56 p.m., two hundred passengers and more than 20 Amtrak crew members escaped serious injury when the train they were riding in crashed into the trailer of a truck fouling a private crossing near Spence Road. The collision caused heavy damage to the train's engine, which was put out of commission. The impact caused 12 of the train's cars to derail sending 16 passengers to area hospitals where they were treated and released for minor injuries.

The agricultural truck was carrying two

Photo 4 *- Ken Galt,Caltrans.*

trailers, loaded with empty pallets that were scattered along the right-of-way after the collision. The truck driver had stopped at the stop sign at the private crossing and thought he could beat the train. The passenger train was estimated to be traveling at approximately 60 mph.

Union Pacific – Oakland: On November 16, 1999, a woman walked up to the railroad tracks, then waited for a train to come before jumping in front of it at about 9 a.m. She was instantly killed by the freight train. The engineer saw the women on the tracks, but was unable to stop the train in time to avoid hitting her. The train was traveling between 5 and 10 mph when it struck her. Police determined it was a suicide.

Amtrak – Fresno: On December 11, 1999, a motorist who got stuck on the tracks at an alley crossing was struck by an Amtrak train at around 10:15 p.m. The passenger train was traveling at less than 35 mph when it struck the front end of the vehicle and pushed it about 10 to 15 yards. The 40 year-old man did not receive serious injuries.

The alleyway between Diana and Lewis Avenues at-grade crossing has a railroad crossing sign, but no automatic crossing gates or signals.

Coaster – San Diego: On December 22, 1999, a man in a wheelchair at the Taylor Street crossing was struck by a Coaster commuter train as he traversed the multiple tracks at 8:30 a.m.

He had turned his wheelchair 90 degrees when he heard the train's horn to determine the proximity of the oncoming train and was struck, receiving serious injuries. The train was traveling about 30 mph.

Source: < www.trainweb.com>

Photo 5 - Metrolink Station

Part II –Crossing Accidents

Grade Crossing Accident Data

The following tables and corresponding charts categorize accidents at public crossings. Accidents and casualties are listed by various categories such as the railroad involved, type of warning device, speed, weather, nature of the accident, tabulations of yearly accidents, and others categories of interest. Table 15 describes the different types of crossing and lists the number of crossing accidents for each type. Approximately 90% of the accidents occurred at public highways on main and branch lines.

Table 15 *- Accidents and Casualties at Public Crossings by Crossing Classification - 1999*

Crossing	Description	Accidents		Casualties			
		Total	% of Total	Killed	Injured	Total	% of Total
Class "A"	Grade crossings of public highways with main and branch lines, including adjacent side tracks	141	90.4	10	52	62	95.4
Class "B"	Grade separations of public highways with railroads	0	0.0	0	0	0	0.0
Class "C"	Grade crossings of public highways with spur tracks not adjacent to main line tracks	15	9.6	0	0	0	0.0
Class "D"	Grade crossings of pedestrian ways and alleys with railroads	0	0.0	0	3	3	4.6
Total		**156**	**100**	**10**	**55**	**65**	**100**

Part II –Crossing Accidents

Table 16 compares the overall accident and casualty data for all highway accidents in California with vehicle-train public crossing accidents. Figure 7 data (from Table 16) shows the trend in crossing accident casualties, expressed as a percentage of the total number of accidents and casualties on all highways. There was a decrease in the percentage in fatalities, from 0.607% in 1998 to 0.283% in 1999.

Table 16 *- Vehicle-Train Accidents and Casualties at Public Crossings Compared with All Highway Accidents in State of California (1990-1999)*

Year	ACCIDENTS			KILLED			INJURED		
	All Highways	Railroad Crossings	Percent	All Highways	Railroad Crossings	Percent	All Highways	Railroad Crossings	Percent
(1)	(2)	(3)	(4) (3)/(2)x 100	(5)	(6)	(7) (6)/(5)x 100	(8)	(9)	(10) (9)/(8)x 100
1990	552,038	174	0.032	5,173	30	0.580	365,758	66	0.018
1991	514,390	193	0.038	4,649	23	0.495	350,068	78	0.022
1992	491,008	140	0.029	4,185	16	0.382	338,154	50	0.015
1993	477,490	152	0.032	4,163	29	0.697	315,184	37	0.012
1994	480,093	163	0.034	4,212	22	0.522	316,441	43	0.014
1995	471,758	156	0.033	4,165	16	0.384	340,941	50	0.015
1996	475,685	154	0.032	3,972	9	0.227	300,106	41	0.014
1997	463,917	126	0.027	3,671	9	0.245	284,871	32	0.011
1998	482,608	153	0.032	3,459	21	0.607	290,698	39	0.013
1999	481,388	156	0.032	3,539	10	0.283	279,801	55	0.020

Note: The Department of California Highway Patrol provides the data on all highway accidents. The number of accidents on all highways now includes non-casualty accidents. The number of casualties at railroad crossings is included in the totals for all highway accidents.

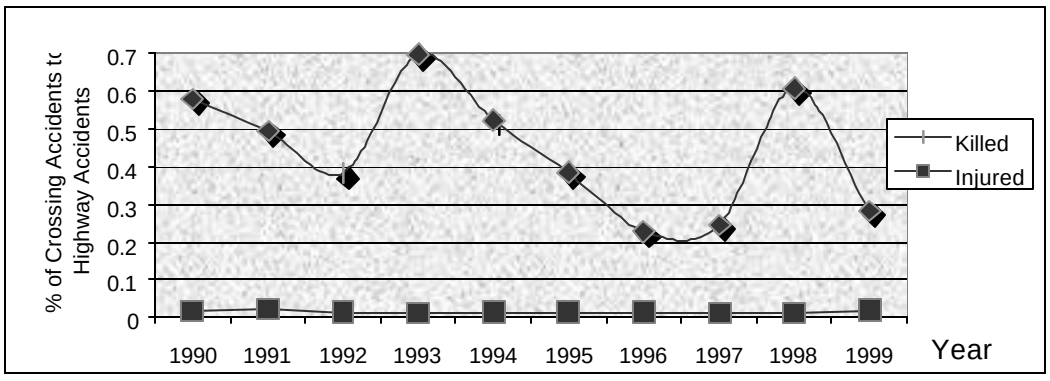


Figure 7 *- Crossing Casualty Rates Compared to All Highway Casualties (1990-1999)*

Part II –Crossing Accidents

Figure 8 (prepared from Table 17 data) shows the number of vehicle-train accidents at public crossings by railroad company. The difference in the number of accidents, among other factors to be considered, likely depends on the total number of crossings, the number of trains, and the amount of vehicle traffic for each railroad and its crossings. For example, 53% of the accidents occurred on the Union Pacific Railroad, which has approximately 49% of the state's railroad crossings.

Table 17 *- Vehicle-Train Accidents at Public Crossings by Railroad - 1999*

RAILROAD	ACCIDENTS	CASUALTIES	
		Killed	Injured
Amtrak (1)	24	5	13
BNSF	27	2	13
UP	82	1	19
SCAX (2)	7	2	1
PCMZ(3)	2	0	4
All Other Railroads	14	0	5
Total	**156**	**10**	**55**

(1) Amtrak uses the two major freight railroads' tracks .
(2) Southern California Regional Railroad Authority (Metrolink).
(3) Peninsula Corridor Joint Powers Board Commuter Service (CALTRAIN).

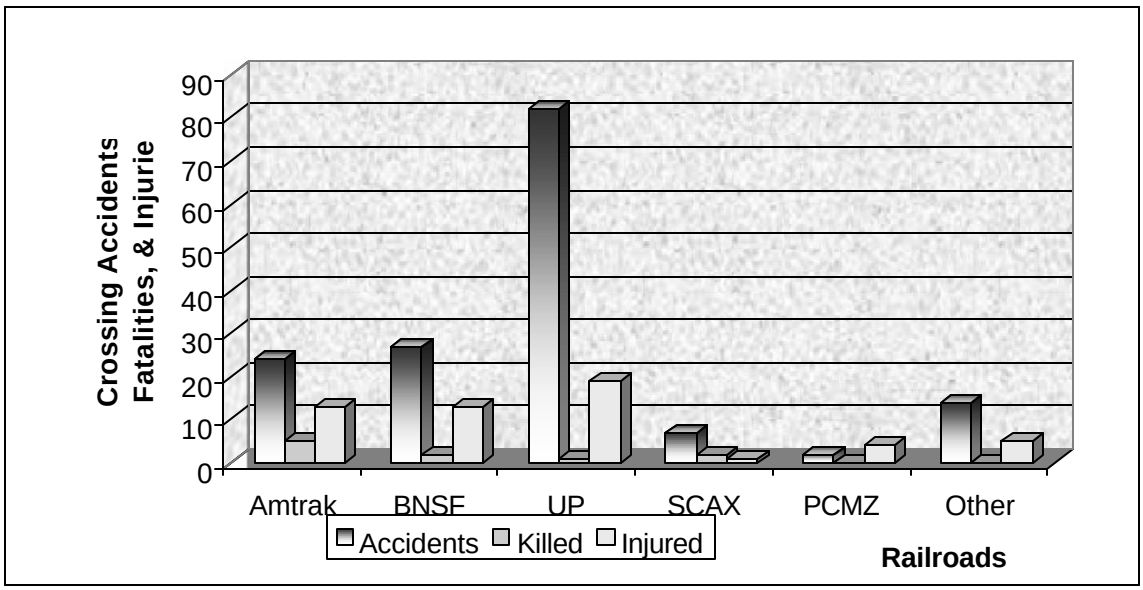


Figure 8 *- Crossing Accidents by Railroad -Totals, Fatalities & Injuries - 1999*

Part II –Crossing Accidents

Figure 9 shows the number of vehicle-train public crossing accidents categorized by vehicle speed. The majority of the accidents occurred at speeds of less than 10 mph, or when vehicles stopped or stalled on the tracks. However, there were a large percentage of fatalities that occurred at higher train speeds. Appendix II-D tabulates the number of vehicle-train public crossing accidents by vehicle speed.

Figure 10 illustrates the number of vehicle-train accidents and casualties at public crossings by various train speeds. Appendix II-D tabulates the number of accidents and casualties by train speeds.

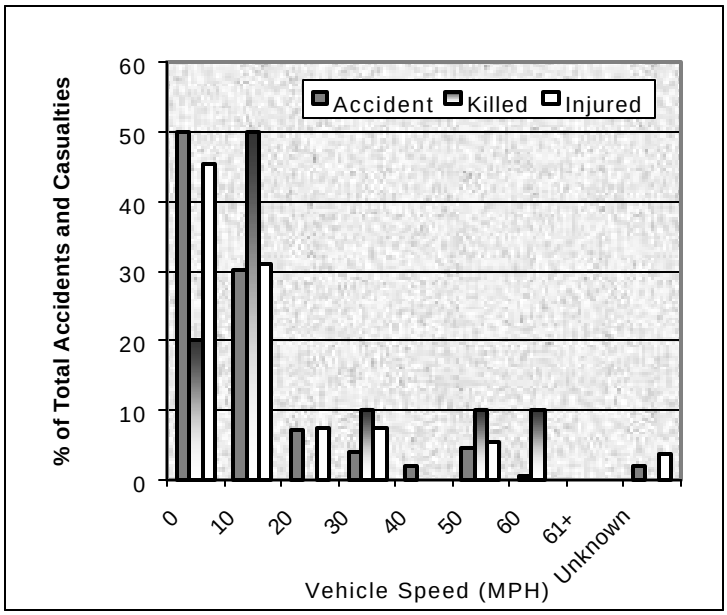


Figure 9 *– Percent of Total Accidents and Casualties by Vehicle Speed - 1999*

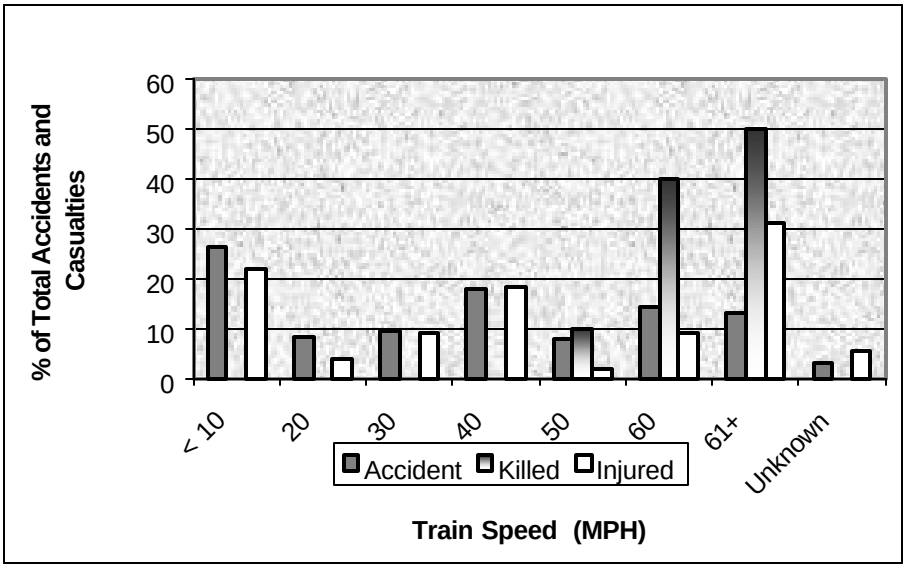
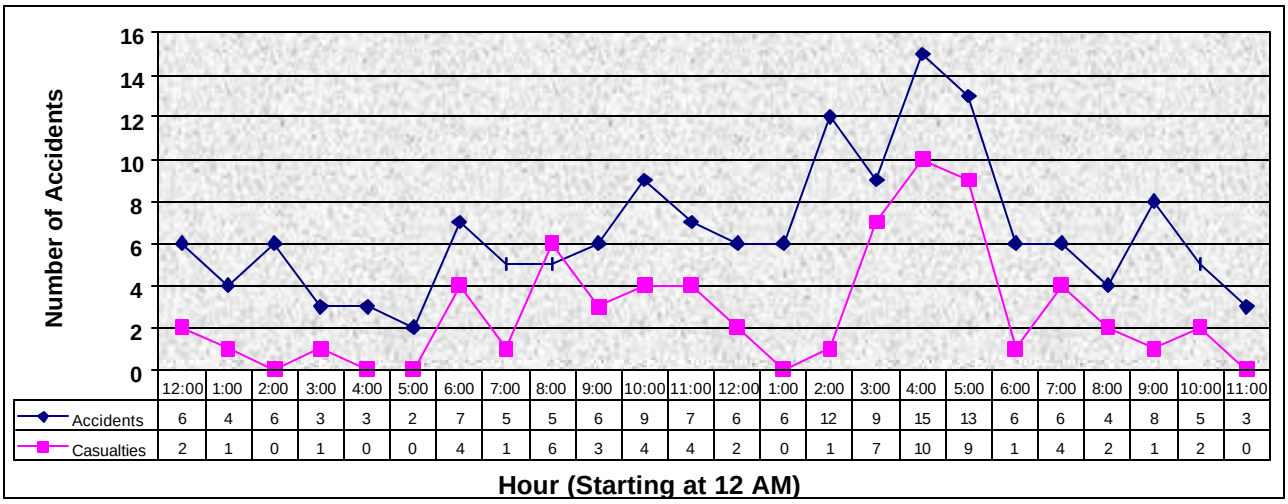


Figure 10 *- Percent of Total Accidents and Casualties by Train Speed – 1999*

Part II –Crossing Accidents

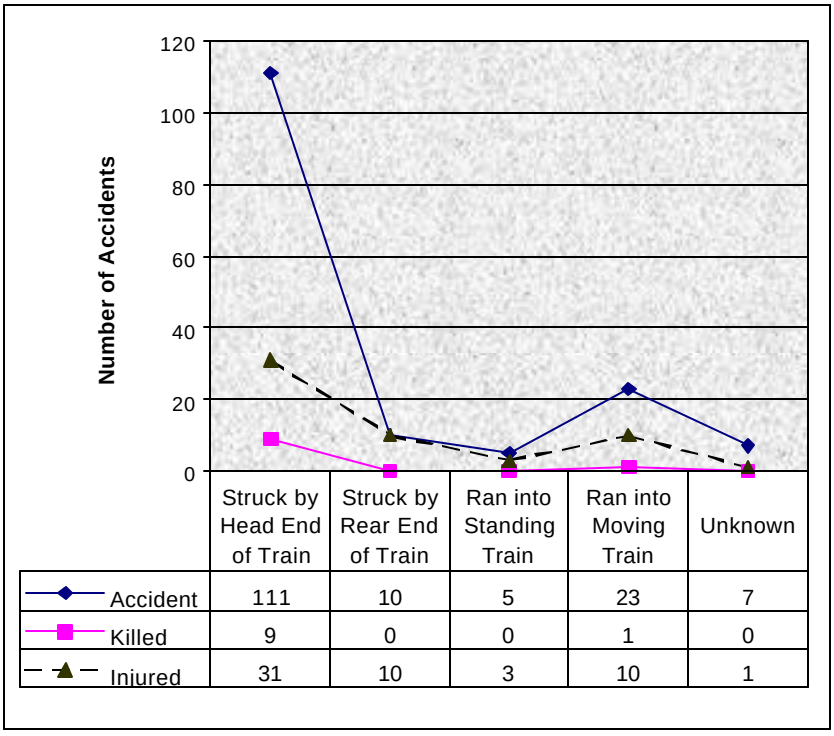
Figure 11 shows the number of vehicle-train accidents at public crossings by time of day. Appendix II-E lists the tabulated data. The higher numbers of casualties occurred during the peak commute and evening traffic hours.



	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00
Accidents	6	4	6	3	3	2	7	5	5	6	9	7	6	6	12	9	15	13	6	6	4	8	5	3
Casualties	2	1	0	1	0	0	4	1	6	3	4	4	2	0	1	7	10	9	1	4	2	1	2	0

Figure 11 *- Accidents by Time of Day – 1999*

Figure 12 shows that the majority of crossing accidents involve the "Head end of the train." "Struck by rear end of train" is when the train's units are being pushed by the locomotive. Some passenger commuter lines allow the engineer to operate the train from either end of the train without relocating the locomotive. Appendix II-F contains more data by type of accident.



	Struck by Head End of Train	Struck by Rear End of Train	Ran into Standing Train	Ran into Moving Train	Unknown
Accident	111	10	5	23	7
Killed	9	0	0	1	0
Injured	31	10	3	10	1

Figure 12 *– Type of Accidents – 1999*

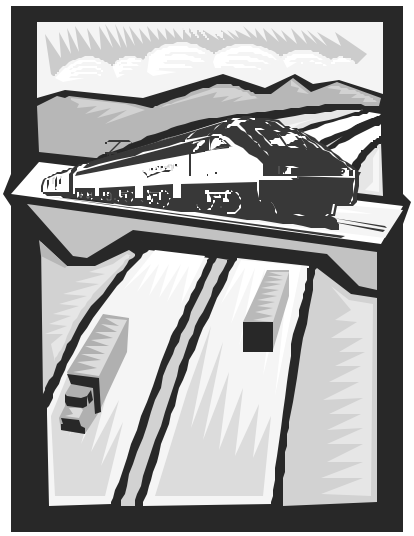
Part II –Crossing Accidents

Grade Crossing Safety Improvements

Four ongoing safety programs serve to improve crossing safety: (1) the Grade Separation Program, (2) the Automatic Grade Crossing Protection Maintenance Fund, (3) Section 130 Railway-Highway Crossing Improvement Program, and (4) Operation Lifesaver.

Grade Separation Program

The optimal safety improvement for a highway-rail grade crossing is the complete separation of the railroad from the highway. Although costly, the complete separation maximizes safety and also reduces highway congestion and delay.



Section 2452 of the Streets and Highways Code requires the Commission to establish, before July 1 of each year, a priority list of highway-rail crossing separation projects (constructing under-or overpass, or alteration and improvement of existing structures). The Department of Transportation (Caltrans) uses this list to allocate annually a $15 million fund provided by the legislature, to assist local governments in financing grade separation projects. The application cycle begins every two years and each new list is effective for two years.

The Commission is responsible for establishing criteria used in a formula to prioritize projects. The formula weighs vehicular and train volumes at crossings along with project costs, and considers a variety of special factors such as accident history, site visibility, the angle of the tracks to the road crossing geometry, blocking delays and other relevant factors. Staff conducts field inspections and performs safety evaluations before public hearings. Interested agencies are responsible for submitting "nominations" with required information. These agencies must be ready to share in the project's cost. The Commission requires applicants to attend hearings and provide testimony in support of their proposals.

During the 1999-2000 fiscal year, the total available funds were $24.5 million; the combination of allocated funds and reverted funds from prior years. Caltrans funded the following projects:

- Shaws-Marks, City of Fresno $5,000,000
- Morning Drive, Kern County $3,537,535
- Oswell Street, Kern County $517,600
- Ramona Avenue, City of Montclair $4,944,000
- Chestnut Avenue, Fresno Co. $4,098,208
- Johnson Drive, City of Ventura $5,000,000
- 7th Standard Road, Kern Co. $1,420,257

The Shaw-Marks project received the second of a third allocation of $5 million. Appendix II-G contains the 2000-2002 Grade Separation Priority list, adopted by the Commission on June 22, 2000.

Part II –Crossing Accidents

Automatic Grade Crossing Protection Maintenance Fund

In 1965, the Legislature established the Automatic Grade Crossing Protection Maintenance Fund to pay the cities' and counties' share of the cost of maintaining automatic grade crossing warning devices installed or upgraded after October 1, 1965. The Public Utilities Code Section 1202.2 requires the Commission to allocate the maintenance cost between the railroads and the public agencies in the same proportion as the cost of construction unless stated otherwise in the decision.

With crossings that are improved pursuant to this fund, the maintenance costs are apportioned 50% between the railroad and the city or county. For a new crossing, the maintenance costs are apportioned pursuant to the agreement between the railroad and the local agency as prescribed in the Commission decision authorizing the crossing.

The fund is augmented in the annual budget of the California Transportation Commission (CTC) for allocation to the Commission. The railroads perform the maintenance during the calendar year, then file a claim with the Commission for reimbursement. The staff determines which crossings are eligible for funding. The Commission requests the allocation from the CTC to pay the railroad corporations participating in this program.

In 1999, the Commission recommended $4,250,000 for the 2000-2001 fiscal year. The CTC approved the Commission's request. In 1999, 3,104 payments went to the railroad corporations to pay the cities and counties share of the cost of maintaining automatic grade crossing warning devices. Since its inception, a total of $59,771,581 has been authorized for payment as of June 30, 2000.

Section 130 Railway-Highway Crossing Improvement Program

The Railway-Highway Crossing Improvement Program (Section 130 Program) is a cooperative effort between the Federal Highway Administration, Caltrans, Commission, railroad companies and local agencies. The federal government initiates this program, as stated in Title 23 of the United States Code, Section 130, by providing funds to improve existing highway-rail grade crossings.

The Section 130 Program reduces the number and severity of highway accidents by upgrading warning devices to reduce the potential for an

Photo 6 - Four quardrant gates at 124th Street.

accident. The staff inspects existing at-grade crossings, makes recommendations for warning device safety enhancements, creates a priority list and forwards it to Caltrans'. Caltrans then administers the funds and approves projects for construction. The Section 130 Program funds approximately 40 crossing improvement projects per year.

California Operation Lifesaver

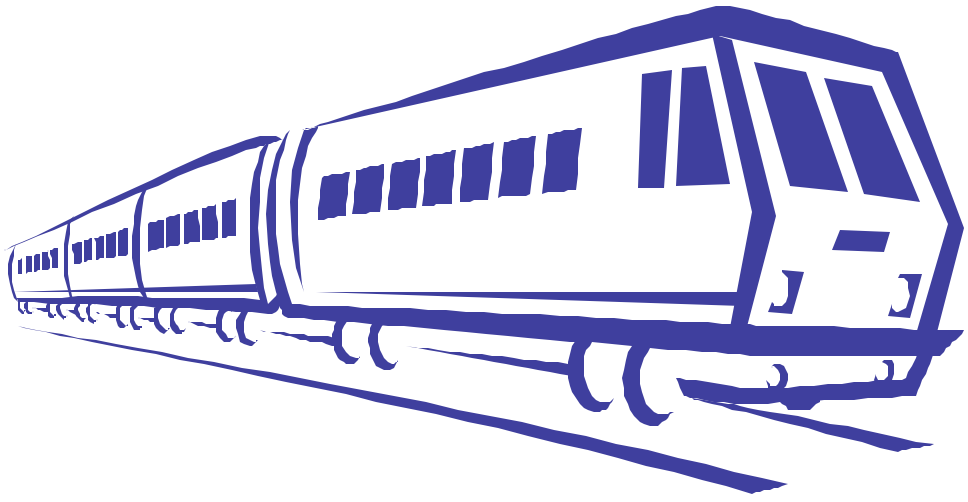
Operation Lifesaver, Inc. (OL) is a nationwide, non-profit public information program dedicated to eliminating collisions, injuries, and fatalities at highway-rail grade crossings, and on railroad rights-of-way. Through a network of State Coordinators in 49 states (excluding Hawaii), OL volunteers include participants from federal, state, and local agencies, railroad companies, law enforcement officials, educators, automobile clubs, and individuals interested in highway-rail crossing safety. The Commission staff has worked with OL since 1979 to increase public awareness of the dangers and hazards associated with highway-rail grade crossings.

OL targets its safety message to trespassers, professional drivers, law enforcement, students, and beginning drivers at education class, as well as mature drivers. Programs carried out throughout the year include: School Bus Driver Training, Trucker on the Train, Officer at Crossing, Emergency Medical Technician Special Training, Officer on the Train, other Professional Driver Training, and Mock Staged Crashes (Fresno). Other special programs included an Union Pacific/California OL special train, a Santa Clara Valley Transportation Authority Rail Safety Opening Day Fair at Tamien Station, "Passport to Safety" in Clovis Waterworld Park, and Metrolink Poster Contest aimed at elementary school children.

In 1999, California Operation Lifesaver, Inc. program volunteers, including Commission staff, gave 2,070 presentations to 173,366 persons and provided information to 161,712 persons at special events. Currently, the state has 342 presenters.

Photo 7 - Operation Lifesaver special event, Compton, CA.

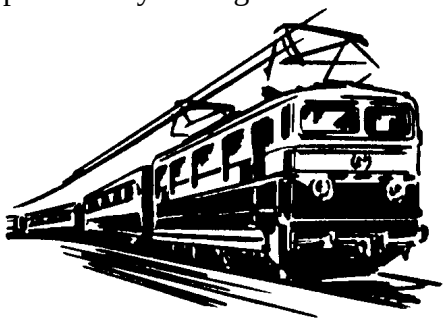
Summary of Reported Accidents/Incidents Occurring on Light Rail, Rapid Rail, and Cable Car Transit Systems



Part III – Rail Transit Accidents

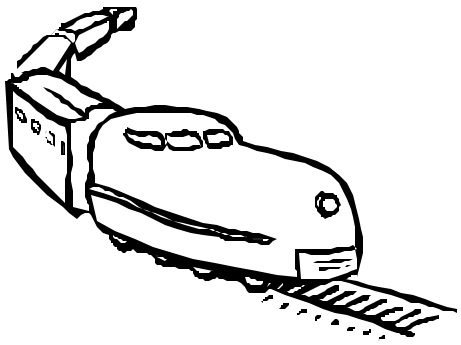
Introduction

There are three types of rail transit systems: light rail transit, rapid rail transit, and cable cars. These systems are distinguished by the technology used for operation, capacity and the right-of-way characteristics. Light rail systems are generally characterized by manual operations (sometimes equipped with over speed protection) and moderate train capacity (1 to 4 cars). They generally operate in semi-exclusive right-of-ways with at-grade motor vehicle crossings, and they may share the right-of-way with motor vehicles and pedestrians on street segments. Rapid rail systems are characterized by high speed, high capacity trains (4 – 10 cars) that operate on exclusive right-of-ways and are governed by cab signaling or automatic train control. Cable cars are historic vehicles that operate on city streets at low speed, low capacity, and are powered by underground cables.

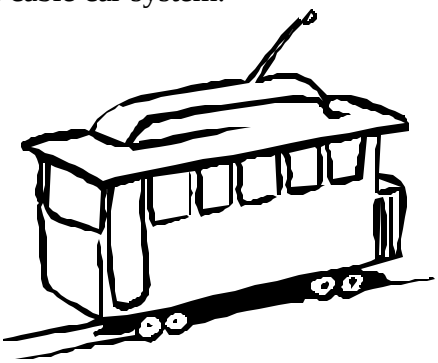


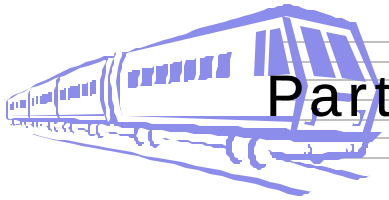
This part presents statistics for each of the three transit system categories. Specifically, the light rail category includes the Los Angeles County Metropolitan Transportation Authority's (LACMTA) Blue Line, the San Diego Trolley Incorporated (SDTI), the San Francisco Municipal Railway (MUNI), the Sacramento Regional Transit District (SRTD), and the Santa Clara Valley Transportation Authority (VTA).

The rapid rail category includes the Bay Area Rapid Transit District (BART), LACMTA's Red Line, and LACMTA's Green Line. Although the LACMTA's Green Line uses light rail vehicles, it is included within the rapid rail transit category, because it operates on an exclusive right-of-way and is governed by an automatic train control system.



The cable car category consists solely of the MUNI cable car system.





Part III – Rail Transit Accidents

Table 18 compares the transit agencies' operations and utilization growth between 1990 and 1999. In the last ten years there has been tremendous growth in the number of train miles traveled as well as the number of passengers carried.

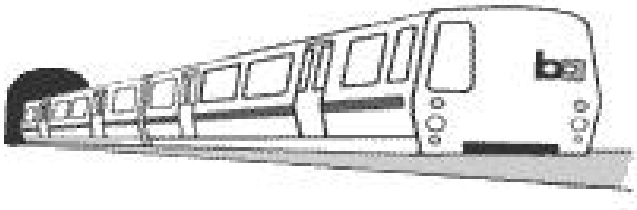
Table 18 - Summary of Rail Transit Operations & Growth (1990-1999)

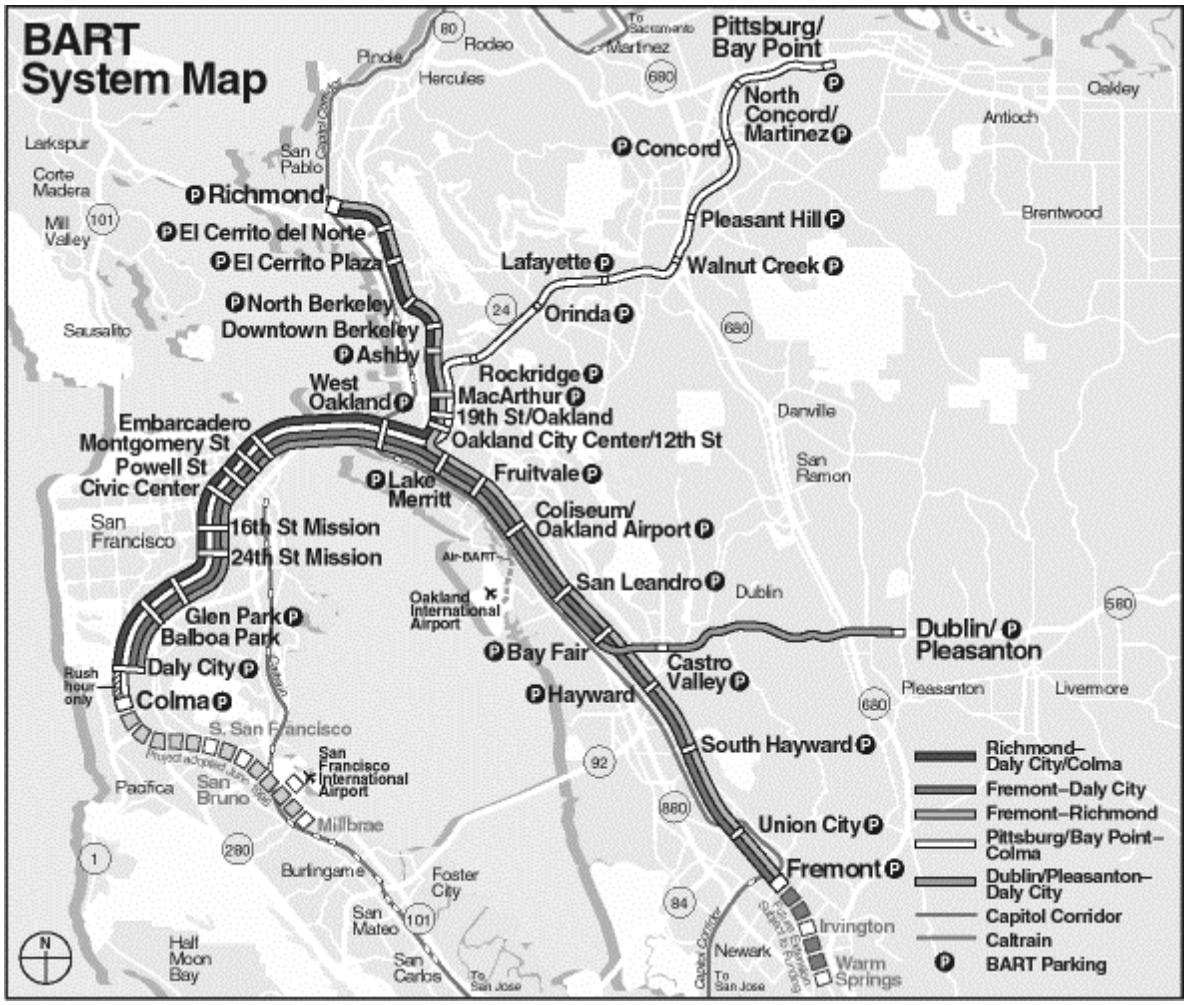
	LIGHT RAIL					RAPID RAIL			Cable Car
Year	**LACMTA Blue Line**	**MUNI**	**SDTI**	**SRTD**	**VTA**	**BART**	**LACMTA Red Line**	**LACMTA Green Line**	**MUNI**
MILES TRAVELED									
1990	806,150	*	1,732,420	850,240	620,435	*	-	-	*
1991	1,406,782	*	1,898,040	847,882	1,394,694	*	-	-	*
1992	1,504,916	*	1,941,075	876,199	1,358,070	*	-	-	*
1993	1,543,943	*	1,916,629	859,326	1,177,178	*	*	-	*
1994	1,510,467	*	1,853,858	836,470	1,190,497	6,472,628	274,679	-	*
1995	1,485,596	*	1,857,743	837,978	1,217,502	6,532,320	290,756	-	*
1996	1,502,527	*	2,004,876	841,967	1,298,468	6,532,320	422,286	1,486,842	*
1997	1,581,460	3,515,431	2,149,348	829,264	1,309,790	7,784,096	508,134	150,0506	561,235
1998	1,608,310	3,718,394	2,677,200	880,518	1,367,052	8,796,144	491,224	1,410,541	544,919
1999	1,603,657	4,425,887	2,698,065	965,048	1,289,923	8,796,144	700,160	1,422,873	493,521
PASSENGERS CARRIED									
1990	3,397,487	*	17,641,662	6,081,113	3,121,870	*	-	-	*
1991	9,649,321	*	17,487,536	6,569,527	4,652,334	*	-	-	*
1992	11,505,550	*	16,865,378	6,271,376	5,332,220	*	-	-	*
1993	12,722,002	*	15,706,044	6,272,546	6,103,723	*	*	-	*
1994	11,711,165	*	14,883,212	6,612,407	5,892,900	*	*	-	*
1995	12,632,400	*	16,444,229	7,004,067	5,801,098	*	*	-	*
1996	14,335,310	*	17,219,838	7,132,700	6,479,076	74,172,921	9,273,867	7,708,827	*
1997	15,008,825	*	19,314,659	7,793,175	6,895,676	74,862,063	10,898,575	5,689,032	*
1998	15,445,975	39,917,538	25,341,192	7,972,150	6,783,527	79,346,585	10,414,265	6,420,050	9,742,590
1999	17,203,500	36,691,019	25,778,434	8,659,950	6,911,500	84,784,070	14,772,565	6,932,127	9,674,172

* Data unavailable

Bay Area Rapid Transit District

BART began revenue operations in 1972. The system comprises 95 miles of track. The A-line, from Fremont to Lake Merritt, is 23.4 miles; the M-line, from Colma to Oakland West, is 16.6 miles; the R-line, from Richmond to MacArthur, is 10.3 miles; the C-line, from Pittsburg/Bay Point to Rockridge, is 25.3 miles; the RK-line, from Rockridge to Oakland West, is 5.1 miles; and, the L-line, from Bay Fair to Dublin/Pleasanton, is 14.0 miles. BART serves four Bay Area counties, including Alameda, Contra Costa, San Francisco, and northern San Mateo Counties. BART plans to move further down the San Francisco Peninsula, adding 8.7 miles of new track and four new stations, including a station located inside San Francisco International Airport (SFO). It is estimated that the BART SFO extension will be completed by the year 2005.





Los Angeles County Metropolitan Transportation Authority

The Blue Line light-rail system began operation in July 1990, and extends 22 miles from downtown Los Angeles to Long Beach. There is a planned extension of 13.6 miles from Union Station in downtown Los Angeles to Sierra Madre Villa Avenue in East Pasadena. Extension construction began in 1994 but was suspended in mid-1998 due to a hold on future funding. In June 1999, the Blue Line Construction Authority was granted money to resume construction.

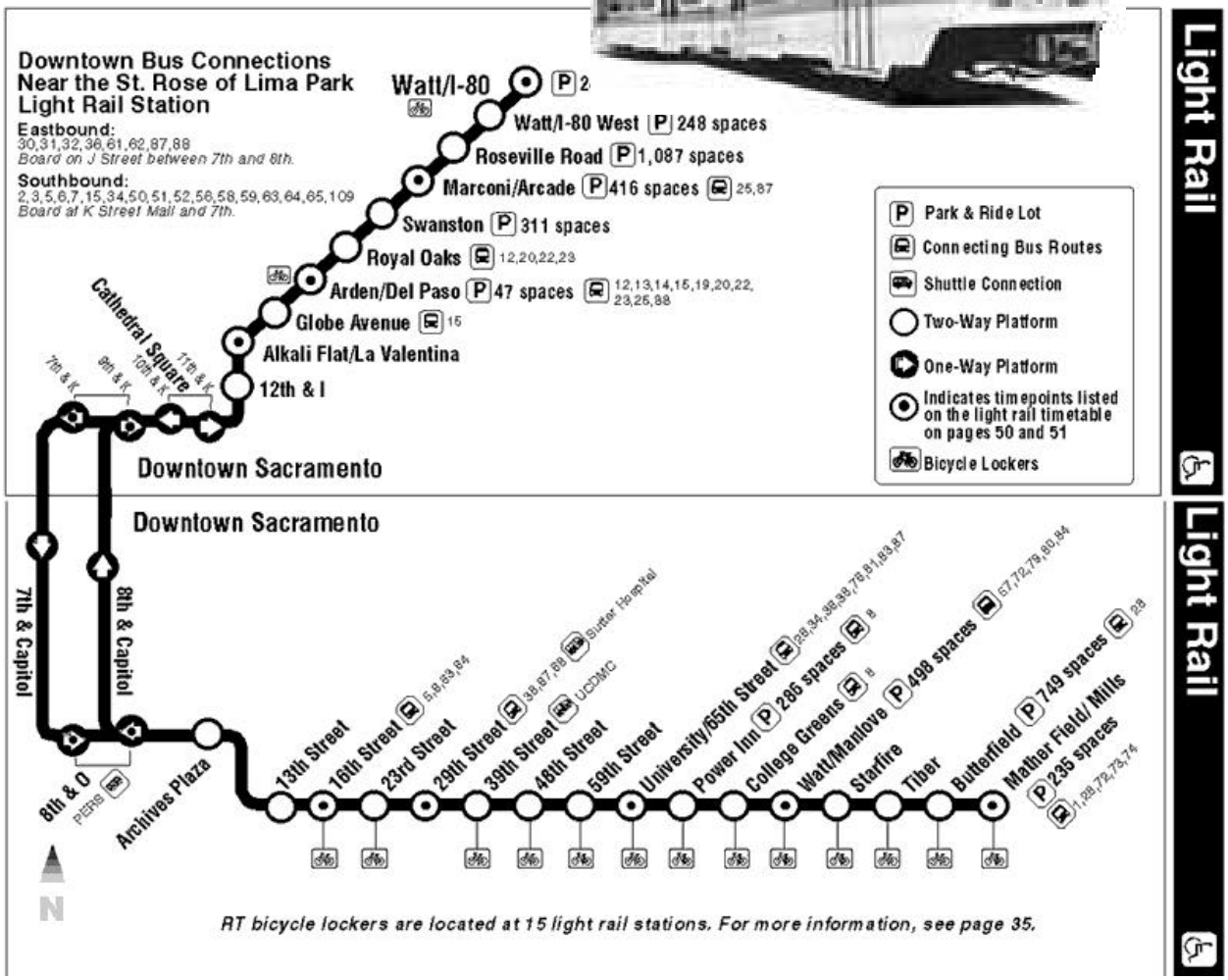
The Red Line, an underground rapid rail transit system that operates by third rail, connects with the Blue Line terminus at the 7th Street/Metro Center Station and with Metrolink trains at the Union Station terminus. The Red Line began operation in January 1993, providing service between Westlake/MacArthur Park to Union Station. The Wilshire Corridor Extension opened for service in July 1996, adding two miles and three stations: Wilshire/Vermont, Wilshire/Normandie and Wilshire/Western.

The Vermont Corridor commensed revenue operations in June 1999, extending the Red Line with 5 stations from Wilshire/Vermont to Hollywood/Vine. In May 2000, it was extended an additional 6.3 miles with three more stations to North Hollywood.

The Green Line opened in August 1997. The line is 19.75 miles in length and provides service from Norwalk to El Segundo. About 16 miles of the Green Line runs along the Century Freeway (Interstate 105) median and 3.5 miles runs on a combination of elevated guideway and ground level exclusive right-of-way.

Sacramento Regional Transit District

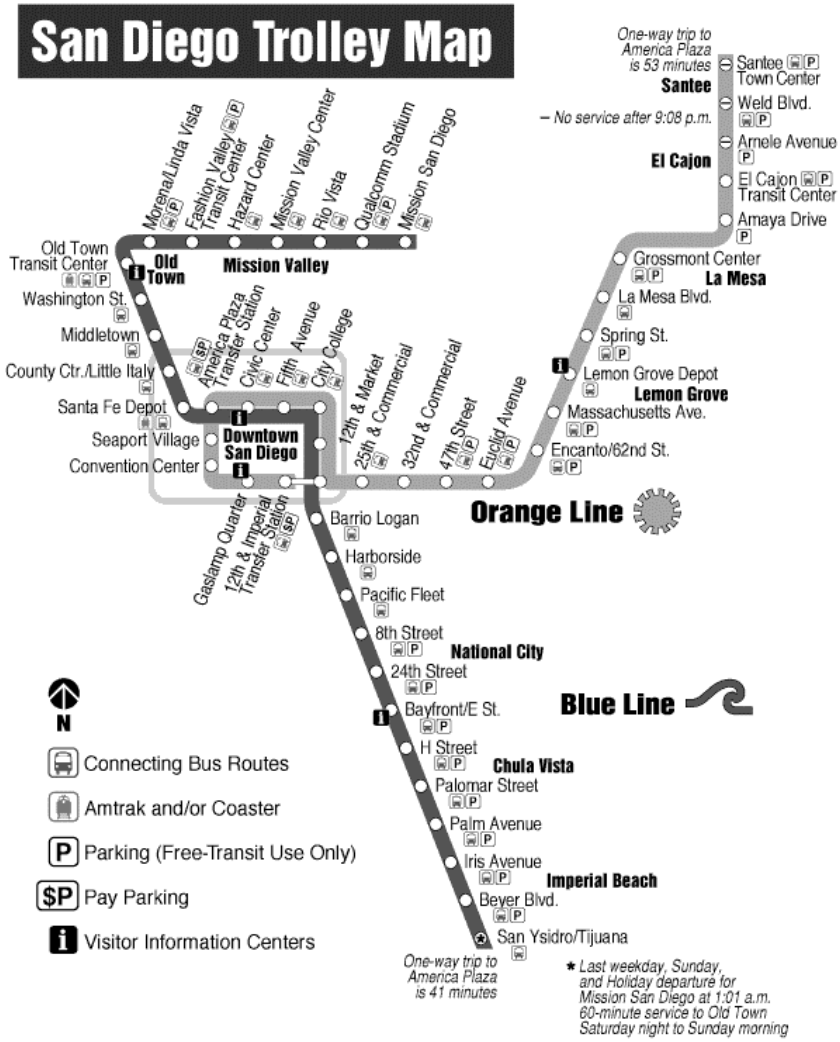
SRTD began operation in 1987 and consists of two rail lines. The Folsom Line extends east from downtown Sacramento almost 12 miles to Mather Field Station in Sacramento County. The North Line joins the Folsom Line in downtown Sacramento and runs northerly about eight and a half miles to Watt/I-80 Station. The system was built originally with 70% single-track operation. Since then, SRTD has begun converting the single-track main line to double track for more efficient operation. A 2.3-mile extension of the Folsom Line from Butterfield Station to Mather Field Road was completed in September 1998 which added one new station.



RT bicycle lockers are located at 15 light rail stations. For more information, see page 35.

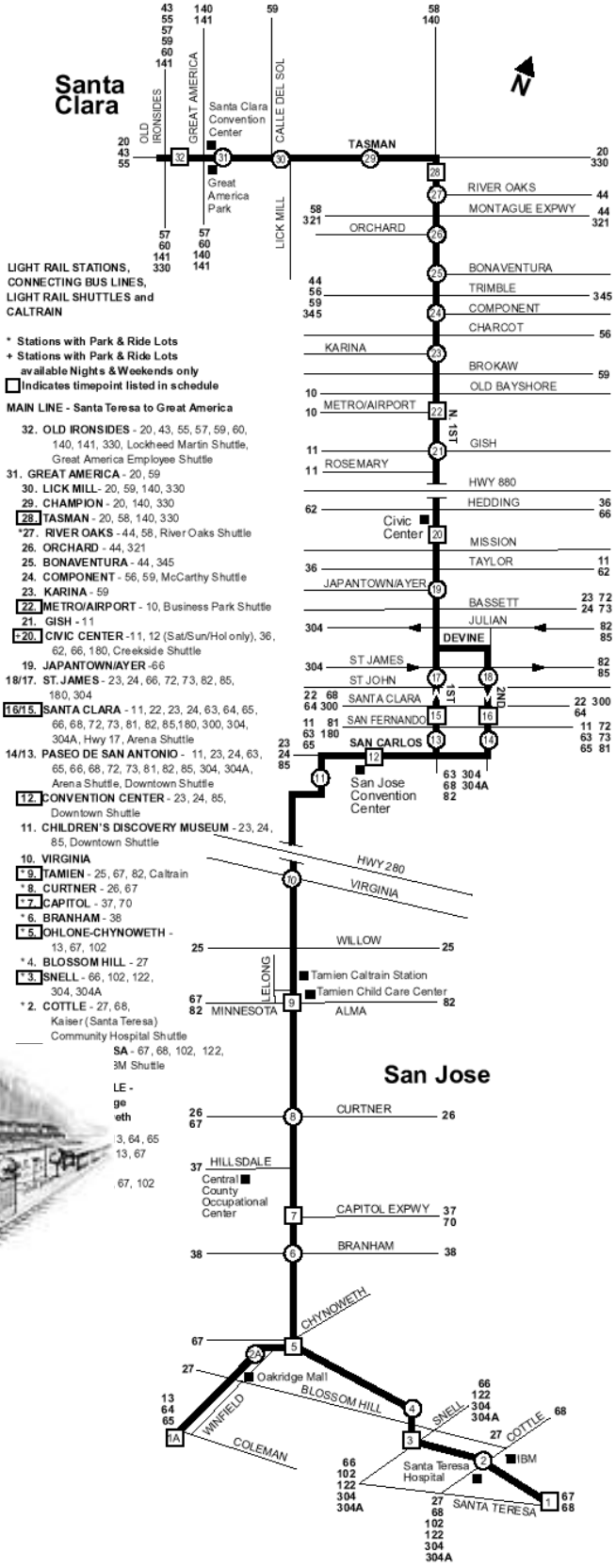
San Diego Trolley Incorporated

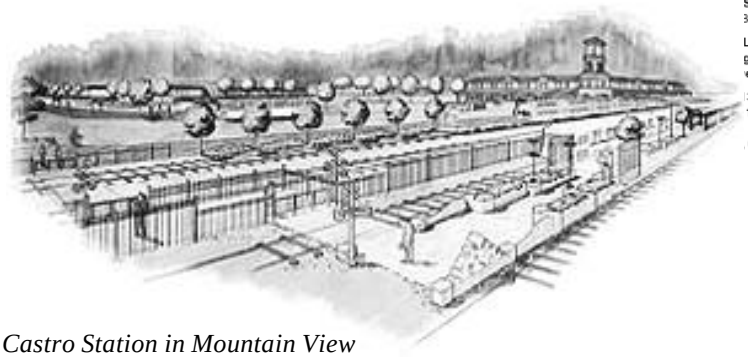
SDTI began revenue service in 1981 and today consists of two operating rail lines. The LRT system operates on 46.4 miles of track: 25.3 miles on the Blue Line and 21.2 miles on the Orange Line. The Blue Line serves the communities of Mission Valley, Old Town, downtown San Diego, National City, Chula Vista, and San Ysidro/U.S. International Border. The Orange Line serves the communities of East San Diego, Lemon Grove, La Mesa, El Cajon and Santee. The Mission Valley - East project currently in design phase at the San Diego Metropolitan Transit Development Board, will provide trolley service to San Diego State University, and the communities of Del Cerro, Lake Murray, and La Mesa. The completion of this project will connect the Mission Valley with the Orange Line at the Grossmont Center station. The extension will provide patrons on the Orange Line with an opportunity to transfer to the Blue Line as an alternative route to reach Old Town San Diego.



Santa Clara Valley Transportation Authority

VTA's light rail system began passenger operations in December 1987 with limited service on North First Street in San Jose. The system has expanded to 28.5 miles of main line track, extending from Santa Teresa Station in southern San Jose to Downtown Mountain View. The one mile Almaden Spur serves residents in the Almaden Valley area of San Jose. The Tasman West project opened for revenue service on December 17, 1999, adding 7.6 miles of track and 12 new stations.





Castro Station in Mountain View

San Francisco Municipal Railway

San Francisco has had rail transit services since 1860 and initiated operation of the world's first successful cable car line in 1873. Beginning in 1912, the San Francisco Municipal Railway (MUNI) was the first large, municipally owned transit system in the United States. It eventually replaced all of the City's privately owned transit systems. With a renewed interest in rail transit, MUNI began operation of its current light rail transit system in 1979.

MUNI serves the 46.7 square miles of the City and County of San Francisco. There are now six light rail/streetcar lines. The system includes a communications based automated subway operation and one line devoted exclusively to historic streetcar operation. Cable cars are operated over three lines on some of the City's steepest hills.

MUNI has several major rail projects, which are in design, construction or have been recently completed. The MUNI Metro East vehicle maintenance facility and storage yard project and the related 3rd Street Extension project are in the design stage. The MUNI Metro Advanced Train Control System is in operation with the operating software being further developed and refined. The delivery of 74 new Breda LRV3 light rail vehicles has begun and is on schedule. The new F-Line Extension to Fisherman's Wharf has been completed and is in operation. Rail replacement and other rail infrastructure rehabilitation projects are continuing.

Part III – Rail Transit Accidents

General Findings

The six California rail transit systems reported 265 light rail, rapid rail, and cable car accidents to the Commission during calendar year 1999. Table 19 summarizes the 265 accidents, including 217 light rail, 19 rapid rail, and 29 cable car accidents. In 1998, the totals were 351, 293, 22 and 36, respectively. A total of 219 casualties were reported, including 23 fatalities, an increase by 4 from 1998.

Appendix III-B lists detailed information regarding all light rail accidents.

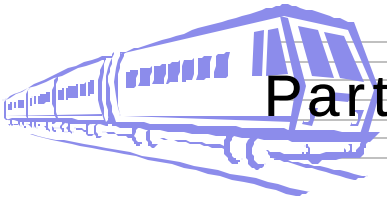
The total reported estimated property damage for all transit system accidents was $2.2 million. Not all accident reports include the dollar value of property damage. Generally, the transit agencies do not include losses due to disrupted service, time lost in travel, recovery cost for trackage and area work, and any subsequent paperwork and claims.

Table 19 *– Summary of Accidents for All Rail Transit Systems – 1999*

Transit Agency	Accidents*	Killed	Injured**
LACMTA's Blue Line	50	10	40
MUNI LRV	107	1	74
SDTI	25	3	14
SRTD	13	4	48
VTA	22	2	4
Total Light Rail	217	20	180
BART	15	2	7
LACMTA's Green Line	1	0	1
LACMTA's Red Line	3	1	2
Total Rapid Rail	19	3	10
MUNI Cable Car	29	0	29
GRAND TOTAL	**265**	**23**	**219**

* Includes a total of eleven suicides and attempted suicides.

** Any person transported to a medical facility for treatment is classified as injured.



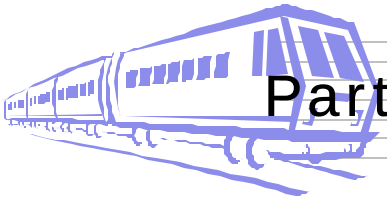
Part III – Rail Transit Accidents

Table 20 differentiates accidents by type of incident for each of the rail transit agencies. For 1999, MUNI LRV had the most accidents with a total of 108, with approximately 40% of those accidents involving collisions with motor vehicles. LACMTA's Blue Line followed with 50 accidents, with the majority of them also due to collisions with motor vehicles.

The majority of all rail transit accidents occurred with motor vehicles, followed by "Other." "Other" includes accidents where passengers were injured while boarding, or when the transit vehicle went into an emergency stop. Appendix III-A has information regarding the number of "other" accidents and casualties involving LRVs.

Table 20 *- Rail Transit Accidents by Type - 1999*

Transit Agency	TYPE OF ACCIDENT								
	Motor Vehicle	Pedestrian	Other	Mainline Derailment	Yard Derailment	Mainline Collision	Yard Collision	Fire/ Smoke/ Evacuations	Total
Light Rail									
LACMTA Blue Line	39	8	2	0	0	0	1	0	50
MUNI	39	5	29	12	9	9	3	1	107
SDTI	15	8	0	2	0	0	0	0	25
SRTD	5	6	1	0	0	1	0	0	13
VTA	14	2	1	2	0	2	1	0	22
Rapid Rail									
BART	0	4	0	1	5	2	2	1	15
LACMTA Green Line	0	1	0	0	0	0	0	0	1
LACMTA Red Line	0	2	0	0	1	0	0	0	3
MUNI Cable Car	9	1	10	8	0	1	0	0	29
TOTAL	**121**	**37**	**43**	**25**	**15**	**15**	**7**	**3**	**265**



Part III – Rail Transit Accidents

Tables 21-23 group accidents by category or rail transit system. LRV-vehicle accidents account for 51.6% of all light rail accidents with 50.5% of all casualties. For 1999, a total of nine pedestrians were killed in LRV-pedestrian accidents. Five LRV-pedestrian accidents were reported to be suicides and one an attempted suicide.

Table 21 *- Light Rail Transit Accidents and Casualties - 1999*

Type of Accident	ACCIDENTS		CASUALTIES			
	Total	% of Total	Killed	Injured[2]	Total	% of Total
LRV-Motor Vehicle	112	51.6	11	90	101	50.5
LRV-Pedestrian[3]	29	13.4	9	21	30	15.0
LRV-Other[1]	4	1.8	0	1	1	0.5
Mainline Derailments	16	7.4	0	3	3	1.5
Yard Derailments	9	4.1	0	0	0	0.0
Mainline Train Collisions	12	5.5	0	34	34	17.0
Yard Train Collisions	5	2.3	0	2	2	1.0
Fire/Smoke Evacuations	1	0.5	0	0	0	0.0
Other Reported Accidents[4]	29	13.4	0	29	29	14.5
TOTAL	**217**	**100.0**	**20**	**180**	**200**	**100.0**

1. Other - includes those accidents/incidents where the train struck a bicycle, or shopping cart.
2. Includes LRV passenger injuries.
3. Includes five (5) reported suicides and one (1) attempted suicide.
4. Includes power outage incident.

Table 22 *- Rapid Rail Accidents and Casualties – 1999*

Type of Accident	ACCIDENTS		CASUALTIES			
	Total	% of Total	Killed	Injured*	Total	% of Total
Train-Pedestrian**	7	36.8	3	4	7	53.8
Mainline Derailments	1	5.3	0	0	0	0.0
Yard Derailments	6	31.6	0	1	1	7.7
Mainline Train Collisions	2	10.5	0	0	0	0.0
Yard Train Collisions	2	10.5	0	0	0	0.0
Fire/Smoke Evacuations	1	5.3	0	5	5	38.5
Other Reported Accidents	0	0.0	0	0	0	0.0
TOTAL	**19**	**100.0**	**3**	**10**	**13**	**100.0**

* Includes train passenger injuries.
** Includes three (3) suicides and two (2) attempted suicides.

Table 23 *- San Francisco MUNI Cable Car Accidents and Casualties - 1999*

Type of Accident	ACCIDENTS		CASUALTIES			
	Total	% of Total	Killed	Injured[2]	Total	% of Total
Cable Car-vehicle	9	31.0	0	9	9	31.0
Cable Car-Pedestrian	1	3.4	0	1	1	3.4
Cable Car-Other[1]	3	10.3	0	12	12	41.4
Mainline Derailments	8	27.6	0	0	0	0.0
Yard Derailments	0	0.0	0	0	0	0.0
Mainline Train Collisions	1	3.4	0	0	0	0.0
Yard Train Collisions	0	0.0	0	0	0	0.0
Other Reported Accidents[3]	7	24.1	0	7	7	24.1
TOTAL	**29**	**100.0**	**0**	**29**	**29**	**100.0**

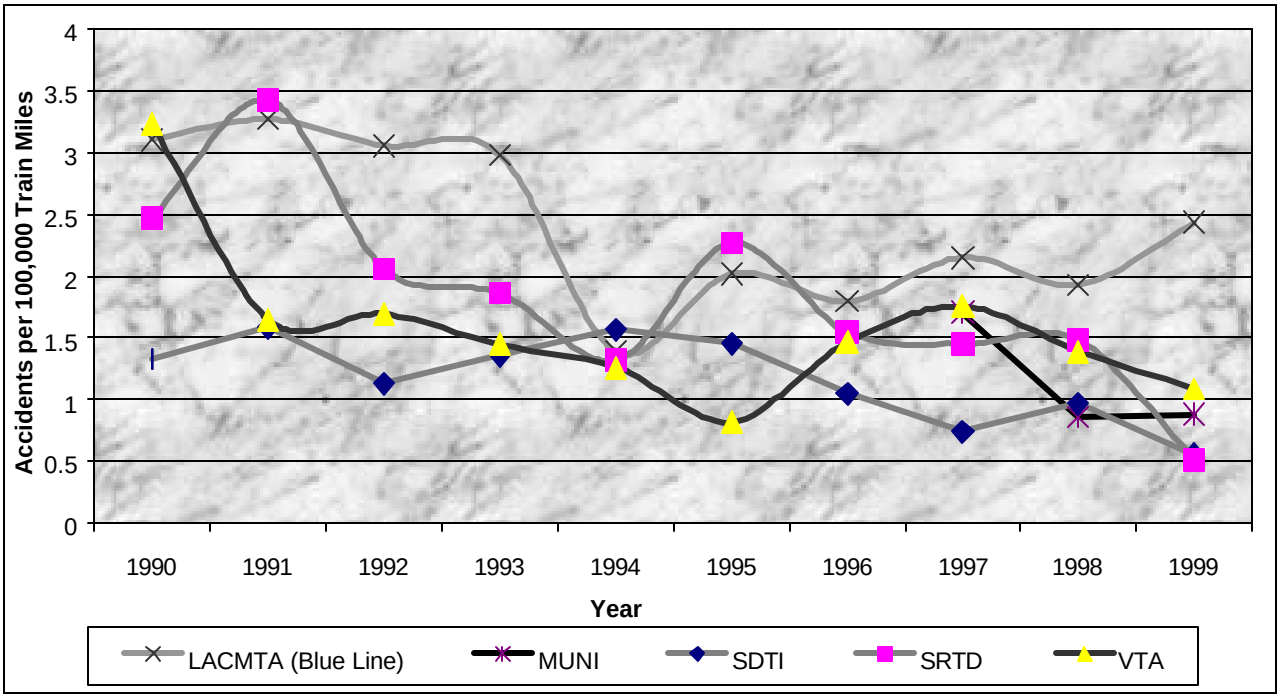
1. Cable Car-Other: includes those accidents/incidents where the cable car struck the slot rail twice and an errant tow pin once.
2. Includes cable car passenger injuries.
3. Other Reported Accidents includes injuries to passengers from falls when cable car came to a sudden stop, or boarding/alighting.

Light Rail Accident Data

The following provide light rail transit system statistics, with each table or graph depicting the number of accidents, casualties, accident type, and other categories.

Since 1990, the general trend has been a drop in the rate of LRV-motor vehicle accidents. The overall rate of accidents has dropped by nearly 54% from 2.22 in 1990 to 1.02 motor vehicle accidents per 100,000 train-miles in 1999.

Figure 13 illustrates the changes in LRV-motor vehicle accidents per 100,000 train-miles for the light rail agencies during the past ten years. Table 24 contains the actual data.



LACMTA (Blue Line) – Los Angeles County Metropolitan Transportation Authority
MUNI LRV – San Francisco Municipal Railway
SDTI – San Diego Trolley, Inc.
SRTD – Sacramento Regional Transit District
VTA – Santa Clara Valley Transportation Agency

***Figure 13** – Light Rail-Motor Vehicle Accident Rates (1990-1999)*

Table 24 *– Summary of LRV-Motor Vehicle Accident Rates (1990-1999)*

LRT Agency	Year									
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
LACMTA's Blue Line										
train miles (100K)	8.06	14.07	15.05	15.44	15.10	14.86	15.03	15.81	16.08	16.04
accidents	25	46	46	46	21	30	27	34	31	39
accidents/ 100K miles	3.10	3.27	3.06	2.98	1.39	2.02	1.80	2.15	1.93	2.43
MUNI										
train miles (100K)	*	*	*	*	*	*	*	35.15	37.18	44.26
Accidents	*	*	*	*	*	*	*	60	32	39
accidents/ 100K miles	*	*	*	*	*	*	*	1.71	0.86	0.88
SDTI										
train miles (100K)	17.32	18.98	19.41	19.17	18.54	18.58	20.05	21.49	26.77	26.98
Accidents	23	30	22	26	29	27	21	16	26	15
accidents/ 100K miles	1.33	1.58	1.13	1.36	1.56	1.45	1.05	0.74	0.97	0.56
SRTD										
train miles (100K)	8.50	8.48	8.76	8.59	8.36	8.38	8.42	8.29	8.80	9.65
Accidents	21	29	18	16	11	19	13	12	13	5
accidents/ 100K miles	2.47	3.42	2.05	1.86	1.32	2.27	1.54	1.45	1.48	0.52
VTA										
train miles (100K)	6.20	13.95	13.58	11.77	11.90	12.17	12.98	13.10	13.67	12.90
Accidents	20	23	23	17	15	10	19	23	19	14
accidents/ 100K miles	3.22	1.65	1.69	1.44	1.26	0.82	1.46	1.76	1.39	1.09
Totals										
train miles (100K)	40	55	57	55	54	54	56	94	103	110
Accidents	89	128	109	105	76	86	80	145	121	112
accidents/ 100K miles	2.22	2.31	1.92	1.91	1.41	1.59	1.42	1.55	1.18	1.02

* Data not available.

LRV-MOTOR VEHICLE ACCIDENTS AND CASUALTIES

This section compares summary accident information for LACMTA's Blue Line, MUNI LRV, SDTI, SRTD, and VTA.

Figure 14 shows the ten-year history of accidents per one hundred thousand train miles for all light rail transit systems. The ratio has generally been dropping since 1990.

Table 25 shows the number of LRV-motor vehicle accidents and casualties for the five light rail transit agencies during 1999. There was a 7.4% drop in number of accidents, but the number killed and injured resulting from those accidents has increased by 68% from 1998. The MUNI LRV and LACMTA's Blue Line tied for the highest percentage of accidents in 1999 at 34.8%. LACMTA's Blue Line had the highest total of 39 casualties at 38.6%. MUNI LRV followed at 33 and 32.7%.

Figure 14 *– LRV-Motor Vehicle Accident Rates (1990-1999)*

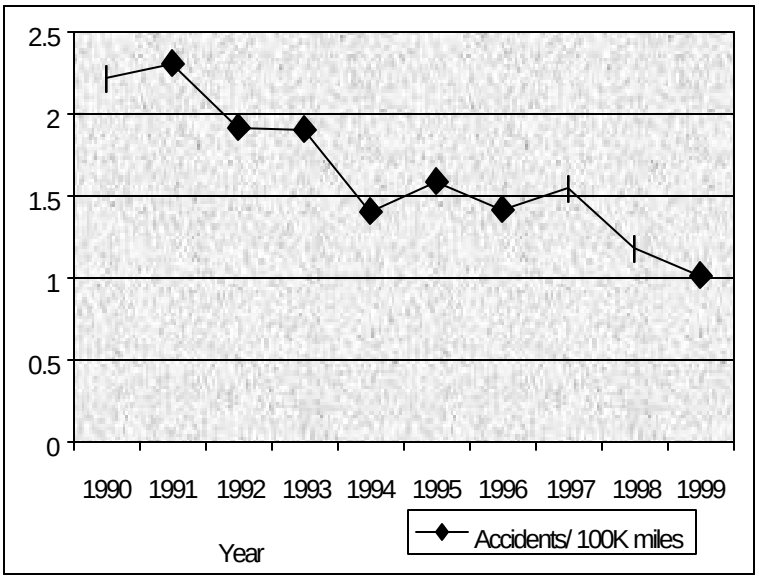


Table 25 *– LRV-Motor Vehicle Accidents And Casualties By Transit Agency - 1999*

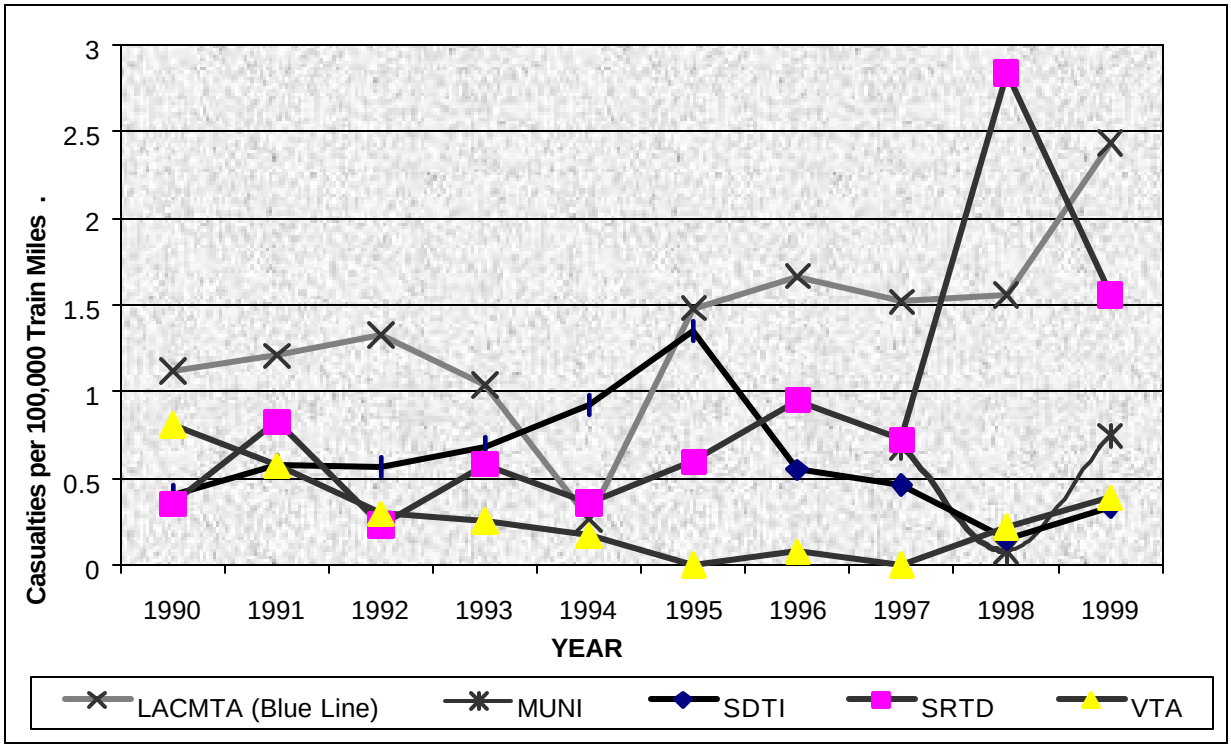
Light Rail Transit Agency	ACCIDENTS		CASUALTIES			
	Total	% of Total	Killed	Injured	Total	% of Total
LACMTA's Blue Line	39	34.8	7	32	39	38.6
MUNI LRV	39	34.8		33	33	32.7
SDTI	15	13.4	1	8	9	8.9
SRTD	5	4.5	2	13	15	14.9
VTA	14	12.5	1	4	5	5.0
Total	**112**	**100.0**	**11**	**90**	**101**	**100.0**

Figure 15 shows the casualty rate for LRV versus vehicle accidents (Table 26 has the actual data). The casualty figure includes injuries and fatalities for LRV passengers as well as motor vehicle passengers.

Over the last ten years the casualty rate for the transit agencies has fluctuated, generally remaining stable for all except LACMTA (Blue Line) and SRTD that have experienced an increasing rate.

For SRTD there was a significant decrease from 2.84 in 1998 to 1.55 casualties per one hundred thousand train miles in 1999.

However, the casualty rate for the five transit agencies increased from approximately 0.6 in 1998 to 0.92 casualties per one hundred thousand train miles in 1999.



LACMTA (Blue Line) – Los Angeles County Metropolitan Transportation Authority
MUNI LRV – San Francisco Municipal Railway
SDTI – San Diego Trolley, Inc.
SRTD – Sacramento Regional Transit District
VTA – Santa Clara Valley Transportation Agency

Figure 15 *– Casualties Rates for LRV-Motor Vehicle Accidents (1990-1999)*

Table 26 *- Casualty Rates for LRV-Motor Vehicle Accidents (1990-1999)*

LRT Agency	Year									
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
LACMTA's Blue Line										
train miles (100K)	8.06	14.07	15.05	15.44	15.10	14.86	15.03	15.81	16.08	16.04
casualties	9	17	20	16	4	22	25	24	25	39
casualties/ 100K miles	1.12	1.21	1.33	1.04	0.26	1.48	1.66	1.52	1.55	2.43
MUNI LRV										
train miles (100K)	*	*	*	*	*	*	*	35.15	37.18	44.26
Casualties	*	*	*	*	*	*	*	24	3	33
casualties/ 100K miles	*	*	*	*	*	*	*	0.68	0.08	0.75
SDTI										
train miles (100K)	17.32	18.98	19.41	19.17	18.54	18.58	20.05	21.49	26.77	26.98
Casualties	7	11	11	13	17	25	11	10	4	9
accidents/ 100K miles	0.40	0.58	0.57	0.68	0.92	1.35	0.55	0.47	0.15	0.33
SRTD										
train miles (100K)	8.50	8.48	8.76	8.59	8.36	8.38	8.42	8.29	8.81	9.65
Casualties	3	7	2	5	3	5	8	6	25	15
casualties/ 100K miles	0.35	0.83	0.23	0.58	0.36	0.60	0.95	0.72	2.84	1.55
VTA										
train miles (100K)	6.20	13.95	13.58	11.77	11.90	12.17	12.98	13.10	13.67	12.90
Casualties	5	8	4	3	2	0	1	0	3	5
casualties/ 100K miles	0.81	0.57	0.29	0.25	0.17	0.00	0.08	0.00	0.22	0.39
Totals										
train miles (100K)	40	55	57	55	54	54	56	94	103	110
Casualties	24	43	37	37	26	52	45	64	60	101
Casualties/ 100K miles	0.60	0.78	0.65	0.67	0.48	0.96	0.80	0.68	0.59	0.92

* Data not available.

Figure 16 below shows the number of LRV-motor vehicle accidents and casualties at grade crossings for the five transit agencies. LACMTA's Blue line had the highest ratio for both accidents and casualties per 100,000 train miles at 2.43 for each. Note that SRTD's 1.55 casualty rate is higher than its 0.52 accident rate.

Table 27 represents the number of accidents by motor vehicle driver action for each of the light rail transit agencies. The highest number of accidents occurred when drivers made a left turn into the path of an LRV.

Left turn accidents amounted to 58 accidents for 1999, representing 52 % of all LRV - vehicle accidents. "Other" vehicle driver action followed at 23 accidents, including accidents involving motor vehicles entering the LRV right-of-way.

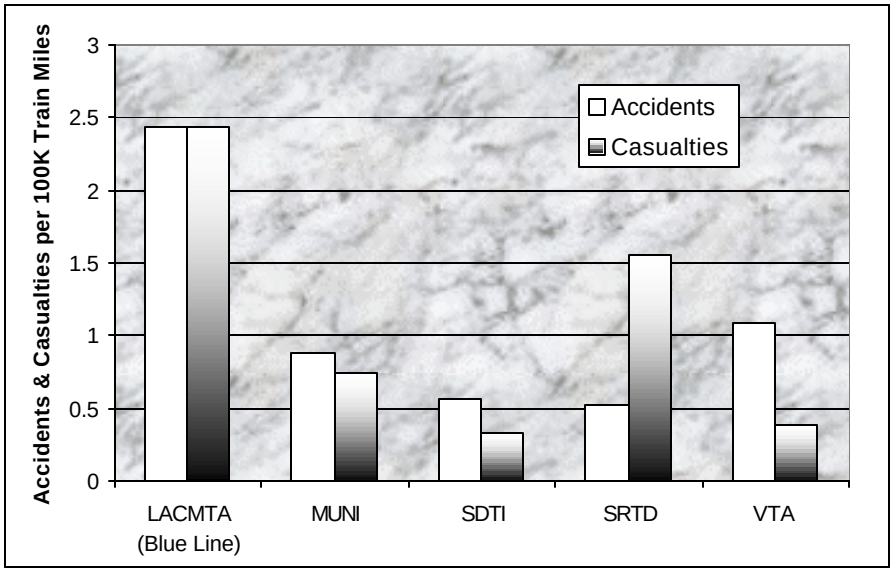


Figure 16 *– LRV-Vehicle Accident and Casualty Rates by Agency – 1999*

Table 27 *– LRV-Vehicle Accidents by Vehicle Driver Action - 1999*

Light Rail Transit Agency	MOTOR VEHICLE DRIVER ACTION					
	Made Left Turn	Made Right Turn	Ran Light or Stop Sign	Ran Gates	Other*	Total
LACMTA's Blue Line	32	0	3	2	2	39
MUNI	13	1	11	0	14	39
SDTI	4	0	5	4	2	15
SRTD	2	1	0	0	2	5
VTA	7	1	1	2	3	14
Total	**58**	**3**	**20**	**8**	**23**	**112**

* Other accidents include those involving vehicles at locations other than at highway and street grade crossings.

LRV-PEDESTRIAN ACCIDENTS AND CASUALTIES

Table 28 shows the number of LRV-pedestrian accidents and casualties by the five light rail transit agencies. LACMTA's Blue Line and SDTI had the highest percentage of accidents at 27.6%. LACMTA's Blue Line had the highest percentage of total casualties at 30% of the total LRV-pedestrian casualties. Of these reported LRV-pedestrian accidents, six (6) were reported as suicides or attempted suicides.

***Table 28** – LRV-Pedestrian Accidents And Casualties By Transit Agency – 1999*

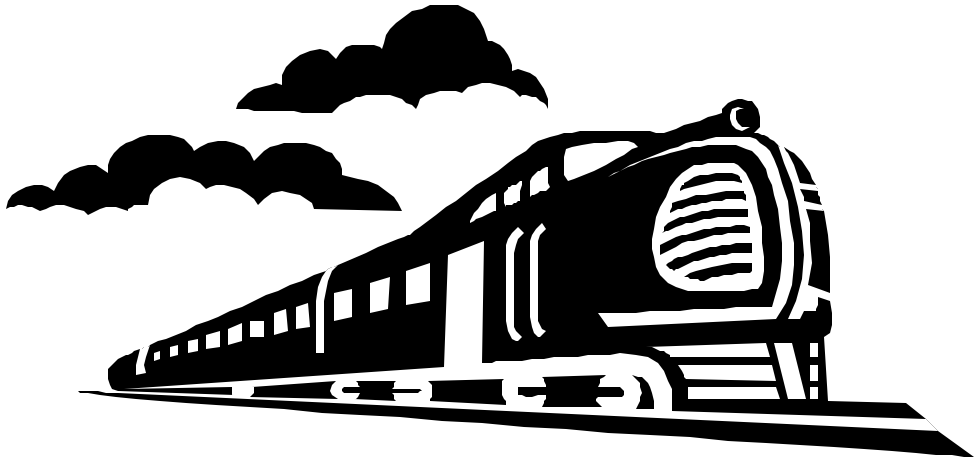
Light Rail Transit Agency	ACCIDENTS*		CASUALTIES			
	Total	% of Total	Killed	Injured	Total	% of Total
LACMTA's Blue Line	8	27.6	3	6	9	30.0
MUNI LRV	5	17.2	1	5	6	20.0
SDTI	8	27.6	2	6	8	26.7
SRTD	6	20.7	2	4	6	20.0
VTA	2	6.9	1	0	1	3.3
Total	**29**	**100.0**	**9**	**21**	**30**	**100.0**

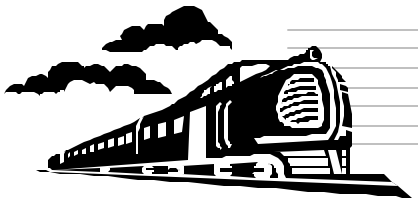
* Includes five (5) reported suicides and one (1) attempted suicide.

Source: www.transitfocus.com/MuniSite/bre04.html, Carmen Magana

***Photo 8** – MUNI Train*

Appendix I
Railroad Accident Data





Appendices

Appendix I-A

Train And Non-Train Accidents Occurring On California Railroads

Reporting Factor	Year	Type of Accident/Incident Report		Grand Total
		Form 54 (1)	Form 55a (2)	
Accidents	1990	175	1,427	1,602
	1991	163	1,370	1,533
	1992	142	1,384	1,526
	1993	138	1,332	1,470
	1994	144	1,065	1,209
	1995	126	894	1,020
	1996	138	827	965
	1997	123	774	897
	1998	150	859	1,009
	1999	173	884	1,057
Persons Killed	1990	4	71	75
	1991	0	80	80
	1992	2	99	101
	1993	2	99	101
	1994	0	119	119
	1995	0	106	106
	1996	2	96	98
	1997	1	105	106
	1998	0	114	114
	1999	9	90	99
Persons Injured or	1990	16	1,356	1,372
Occupational Illness	1991	73	1,290	1,363
	1992	15	1,285	1,300
	1993	6	1,233	1,239
	1994	15	946	961
	1995	14	788	802
	1996	7	731	738
	1997	25	690	715
	1998	23	754	777
	1999	33	770	803

1. Form 54 requirements are collisions, derailments, fires, explosions, Acts of God, and other events involving the operation of on-track equipment (standing or moving), and causing more than $6,600 of reportable damage, including grade crossings accidents.
2. Form 55a summarizes railroad accidents/experiences not covered by Form 54 or Form 57 (grade crossing accidents).

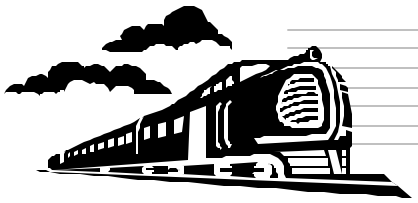
Appendix I-B

Rail Equipment Accident Reports 1999

CARRIER	ACCIDENT/INCIDENT				ESTIMATED COST IN DOLLARS		
	Derailment	Collision	Other	Total	Equipment	Track, Signal	Total Accident Damage
SCAX	2	6	0	8	$1,307,741	$35,755	$1,753,996
BNSF	43	3	4	50	$1,147,878	$1,357,030	$3,230,008
UPRR	59	6	16	81	$4,373,262	$3,821,884	$9,989,059
AMTRAK	7	9	7	23	$2,236,838	$4,358	$3,310,746
OTHERS	9	2	0	11	$400,436	$111,450	$902,475
TOTAL	120	26	27	173	$9,466,155	$5,330,477	$19,186,284

Reporting requirement:

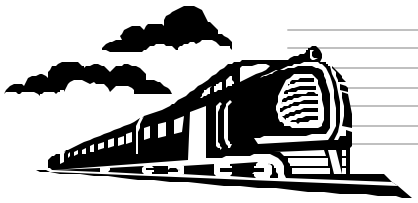
Any collision, derailment, fire, explosion, Act of God, or other event involving operation of railroad on-track equipment (standing or moving) which results in more than $6,600 in damages to railroad on-track equipment, signals, track, track structures and roadbed is reported to the Commission by copy of the prescribed Federal form furnished not later than 30 days after the end of the month in which the accident/incident occurred.



Appendix I-C

Rail Equipment Accident Reports: Accident Causes and Related Casualties - 1999

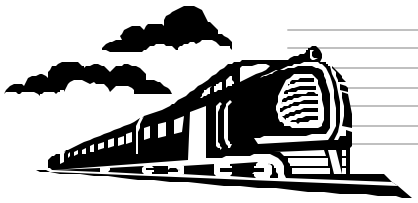
Carrier/ Type of Accident	Cause						Casualties	
	TRACK	MECH	SIGNAL	Train Operation Human Factors	Misc.	Total	Killed	Injured
SCAX - Derailment	2	0	0	0	0	2	0	0
Collision	0	0	0	1	5	6	1	2
Fire	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0
Total	2	0	0	1	5	8	1	2
BNSF - Derailment	14	6	0	16	7	43	0	0
Collision	0	0	0	2	1	3	0	0
Fire	0	0	0	0	0	0	0	0
Other	0	0	0	4	0	4	0	0
Total	14	6	0	22	8	50	0	0
UPRR - Derailment	33	4	1	16	5	59	0	0
Collision	0	0	0	2	0	2	1	2
Fire	0	0	0	0	0	0	0	0
Other	1	0	0	12	3	16	0	1
Total	34	4	1	30	8	77	1	3
AMTRAK - Derailment	4	0	0	2	1	7	0	8
Collision	0	0	0	1	8	9	3	12
Fire	0	0	0	0	0	0	0	0
Other	0	0	0	0	7	7	0	0
Total	4	0	0	3	16	23	3	20
OTHERS - Derailment	3	0	0	5	1	9	0	2
Collision	0	0	1	0	5	6	4	6
Fire	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0
Total	3	0	1	5	6	15	4	8
TOTAL ALL – Derailment	56	10	1	39	14	120	0	10
Collision	0	0	1	6	19	26	9	22
Fire	0	0	0	0	0	0	0	0
Other	1	0	0	16	10	27	0	1
Total	57	10	2	61	43	173	9	33



Appendix I-D

Casualties to Railroad Employees - 1999
(Except Train and Engine Employees)

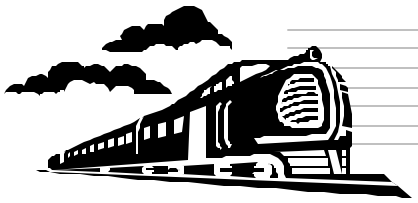
Accident Type	ATK		BNSF		UPRR		OTHER		TOTAL	
	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured
Overexertion	0	16	0	4	0	19	0	5	0	44
Struck by object	0	10	0	6	0	12	0	11	0	39
Slipped, fell, stumbled, etc. due to object, e.g. ballast, spike, material, etc.	0	6	0	2	0	13	0	4	0	25
Lost Balance	0	9	0	2	0	11	0	0	0	22
Struck against object	0	8	0	1	0	3	0	4	0	16
Collision/impact - auto, truck, bus, van, etc.	0	1	0	2	0	9	0	0	0	12
Struck by falling object	0	3	0	3	1	3	0	2	1	11
Bodily function/sudden movement, e.g. sneezing, twisting	0	0	0	5	0	5	0	1	0	11
Repetitive motion – work processes	0	0	0	2	0	8	0	1	0	11
Derailment	0	8	0	0	0	2	0	0	0	10
Repetitive motion – typing, keyboard, etc.	0	9	0	0	0	0	0	0	0	9
Caught in or crushed by materials	0	0	0	2	0	3	0	2	0	7
Defective/malfunctioning equipment	0	0	0	4	0	2	0	1	0	7
Slipped, fell, stumbled, etc. due to irregular surface, e.g. depression, slope, etc.	0	0	0	3	0	4	0	0	0	7
Sudden unexpected movement of material	0	0	0	3	0	4	0	0	0	7
Slipped, fell, stumbled, other	0	3	0	0	0	1	0	3	0	7
Highway-rail collission/impact	0	4	0	0	0	0	0	2	0	6
Struck by thrown or propelled object	0	0	0	1	0	5	0	0	0	6
Other Categories	0	21	0	8	0	40	0	14	0	83
Total	**0**	**98**	**0**	**48**	**1**	**144**	**0**	**50**	**1**	**340**



Appendix I-E

Casualties to Train and Engine Employees - 1999

Accident/Incident Type	ATK		BNSF		UPRR		OTHER		TOTAL	
	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured
Overexertion	0	2	0	8	0	21	0	9	0	40
Slipped, fell, stumbled, etc. due to irregular surface	0	0	0	6	0	10	0	3	0	19
Slipped, fell, stumbled, etc. due to object, e.g. ballast, spike, material, etc.	0	0	0	7	0	7	0	2	0	16
Struck by object	0	3	0	4	0	4	0	0	0	11
Struck against object	0	3	0	0	0	7	0	1	0	11
Collision – between on track equipment	0	0	0	4	0	6	0	0	0	10
Highway-rail collision/impact	0	6	0	1	0	1	0	2	0	10
Lost Balance	0	1	0	1	0	8	0	0	0	10
Slipped, fell, stumbled, other	0	0	0	0	0	9	0	0	0	9
Caught, crushed, pinched, other	0	0	0	1	0	5	0	2	0	8
Sudden, unexpected movement, other	0	2	0	1	0	5	0	0	0	8
Collision/impact - auto, truck, bus, van, etc.	0	0	0	0	0	7	0	0	0	7
Missed handhold, grabiron, step, etc.	0	1	0	1	0	3	0	2	0	7
Slipped, fell, stumbled, etc. due to climatic condition	0	1	0	3	0	2	0	1	0	7
Sudden unexpected movement of on-track equipment	0	2	0	0	0	5	0	0	0	7
Climatic conditions, other e.g. high winds	0	0	0	0	0	6	0	0	0	6
Defective/malfunctioning equipment	0	0	0	1	0	1	0	4	0	6
Stepped on object	0	0	0	2	0	2	0	2	0	6
Struck by on-track equipment	0	0	0	2	0	4	0	0	0	6
Other Categories	0	1	0	13	1	33	0	16	1	63
Total	**0**	**22**	**0**	**55**	**1**	**146**	**0**	**44**	**1**	**267**



Appendix I-F

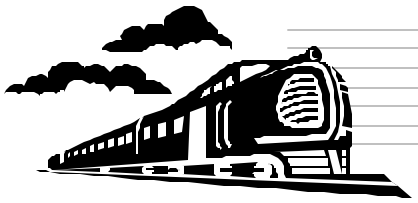
Non-Employee Casualties Including Trespassers by Type of Occurrences - 1999

Accident Type	ATK		BNSF		UPRR		OTHER		TOTAL	
	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured
Highway-rail collision/ impact	9	7	8	15	4	23	3	12	24	57
Struck by on-track equipment	12	3	9	2	54	29	4	2	79	36
Lost Balance	0	3	0	0	3	7	0	1	3	11
Slipped, fell, stumbled, etc. due to irregular surface	0	0	0	0	0	1	0	3	0	4
Struck against object	1	0	0	1	0	2	0	1	1	4
Slipped, fell, stumbled, other	0	2	0	0	2	1	0	1	2	4
Collision/impact –auto, truck, bus, van, etc.	0	0	0	1	0	0	0	2	0	3
Struck by object	0	0	0	0	0	2	0	1	0	3
Slipped, fell, stumbled, etc. due to object, ballast, spike, etc.	0	0	0	0	0	1	0	1	0	2
Sudden unexpected movement, other	0	0	0	1	0	1	0	0	0	2
Other Categories	0	3	0	0	3	3	0	6	3	12
Total	**22**	**18**	**17**	**20**	**66**	**70**	**7**	**30**	**112**	**138**

Appendix I-G

Railroad Related Casualties by Type of Person – 1999

Type of Person	ATK		BNSF		UPRR		OTHER		TOTAL	
	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured
Executive, Officials & Staff	0	3	0	0	0	0	0	2	0	5
Professionals, Clerical & General	0	34	0	0	0	22	0	4	0	60
Maintenance of Way & Structure	0	0	0	28	0	75	0	27	0	130
Maintenance of Equipment & Stores	0	19	0	20	1	44	0	8	1	91
Transportation (Other than Train, Engine & Yard)	0	42	0	0	0	3	0	9	0	54
Transportation: Train, Engine & Yard	0	22	0	55	1	146	0	44	1	267
Passengers	1	10	0	0	0	0	0	14	1	24
Non-Trespassers	3	2	5	7	2	22	0	4	10	35
Trespassers	18	6	12	13	64	43	7	7	101	69
Contractor's Employees	0	0	0	22	0	8	0	5	0	35
Total	**22**	**138**	**17**	**145**	**68**	**363**	**7**	**124**	**114**	**770**



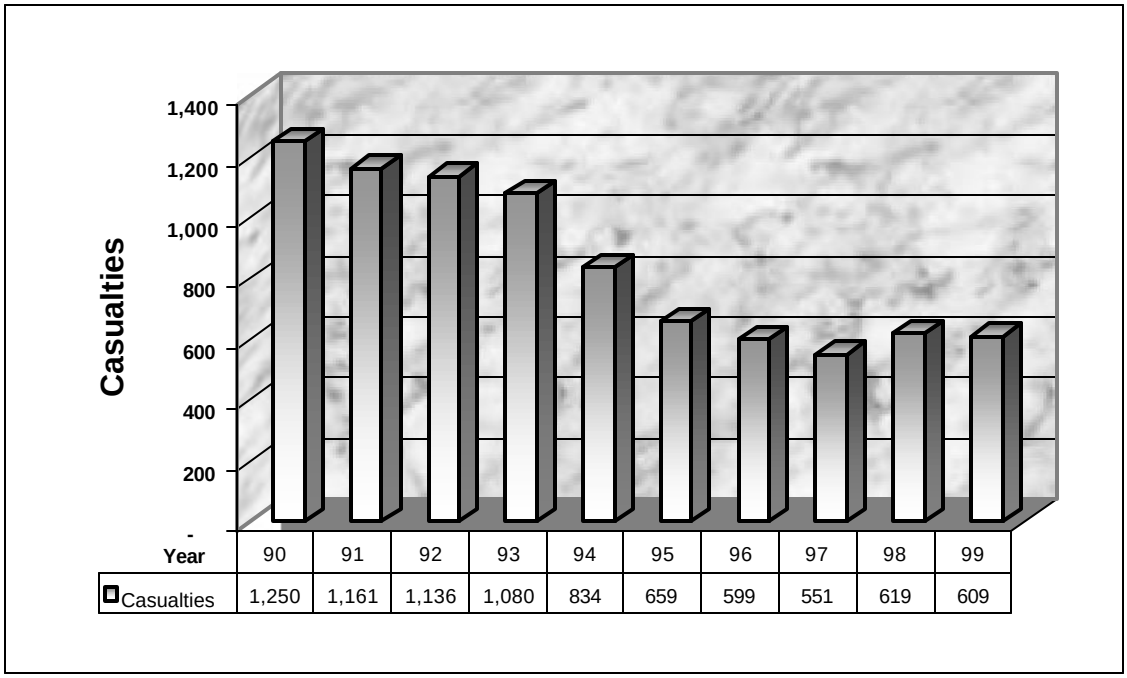
Appendix I-H

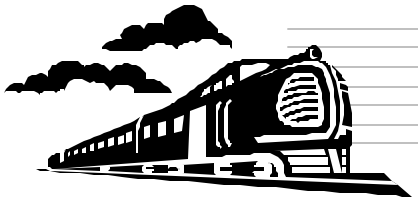
Percentage Of Railroad-Related Casualties By Work Classification 1990-1999

YEAR	PERCENTAGES					
	Executive, Clerical	Maintenance of Way & Structure	Maintenance of Equipment & Stores	Transportation (Other than Train, Engine & Yard)	Transportation: Train, Engine & Yard	Non-R.R. Personnel
1990	8	19	22	3	37	12
1991	6	20	22	4	33	15
1992	10	22	17	3	30	18
1993	8	17	14	7	30	19
1994	10	15	14	8	31	22
1995	7	16	13	8	29	27
1996	6	15	16	9	26	29
1997	7	14	12	9	25	34
1998	6	14	12	7	29	32
1999	7	15	10	6	30	31

Appendix I-I

Total Employee Casualties Reported (1990-1999)





Appendix I-J

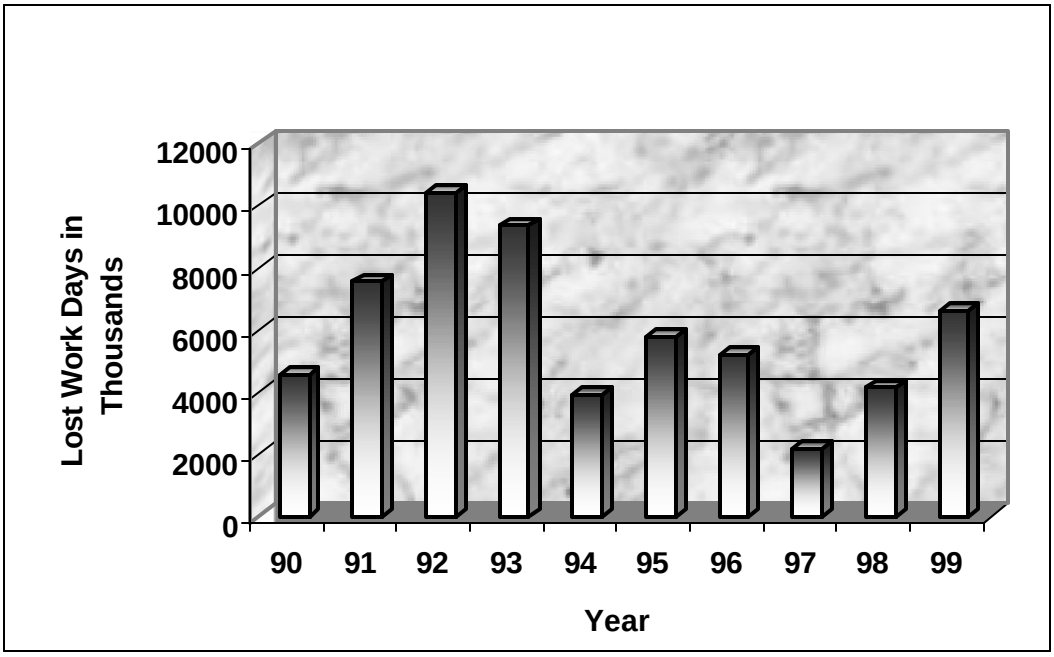
Train & Engine Employee Injury by Lost Workdays

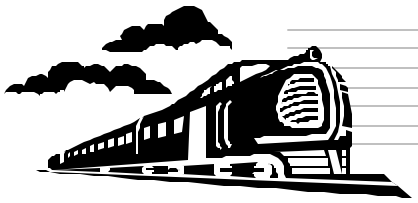
Category **	Number of Injuries	No. of Lost Workdays	% of Total Injuries	Avg. Lost Workdays* per Injury	% of Lost Days
Overexertion	40	3,220	15.0	80.5	15.3
Slipped, fell, stumbled, etc. due to irregular surface	19	2,504	7.1	131.8	11.9
Slipped, fell, stumbled, etc. due to object, e.g. ballast, spike, material, etc.	16	1791	6.0	111.9	8.5
Struck by object	11	546	4.1	49.6	2.6
Struck against object	11	409	4.1	37.2	1.9
Collision – between on track equipment	10	1216	3.7	121.6	5.8
Highway-rail collision/impact	10	104	3.7	10.4	0.5
Lost Balance	10	656	3.7	65.6	3.1
Slipped, fell, stumbled, other	9	1062	3.4	118.0	5.0
Caught, crushed, pinched, other	8	812	3.0	101.5	3.8
Sudden, unexpected movement, other	8	759	3.0	94.9	3.6
Collision/impact - auto, truck, bus, van, etc.	7	449	2.6	64.1	2.1
Missed handhold, grabiron, step, etc.	7	127	2.6	18.1	0.6
Slipped, fell, stumbled, etc. due to climatic condition	7	646	2.6	92.3	3.1
Sudden unexpected movement of on-track equipment	7	971	2.6	138.7	4.6
Climatic conditions, other e.g. high winds	6	77	2.2	12.8	0.4
Defective/malfunctioning equipment	6	482	2.2	80.3	2.3
Stepped on object.	6	552	2.2	92.0	2.6
Struck by on-track equipment	6	688	2.2	114.7	3.3
Other Categories	63	4,040	23.6	64.1	19.1
Total	267	21,111	100	79.1	100

* Lost workdays = Days away from work and days of restricted activity.
** Event Circumstance codes - Form F6180.55a found in Appendix I-N.

Appendix I-K

Train & Engine Crew Lost Work Days Slipped, Fell, Stumbled, Etc. Category (1990-1999)



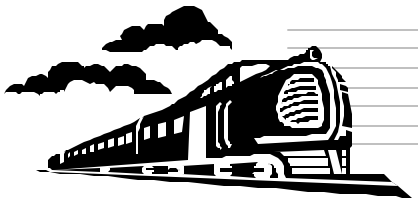


Appendix I-L

Maintenance of Way Injuries by Category 1999

Category	Number of Injuries	No. of Lost Workdays	% of Total Injuries	Avg. Lost Workdays* per Injury	% of Lost Days
Struck by object	19	321	14.6	16.9	5.7
Overexertion	17	779	13.1	45.8	13.9
Slipped, fell, stumbled, etc. due to object	11	774	8.5	70.4	13.8
Bodily function/sudden movement, e.g., sneezing, twisting	8	405	6.2	50.6	7.2
Repetitive motion – work process	7	141	5.4	20.1	2.5
Slipped, fell, stumbled, etc. due to irregular surface	6	624	4.6	104.0	11.1
Caught in or crushed by materials	5	99	3.8	19.8	1.8
Collision/impact - auto, truck, bus, van, etc.	5	632	3.8	126.4	11.3
Lost balance	5	63	3.8	12.6	1.1
Caught in/compressed by other machinery	4	45	3.1	11.3	0.8
Struck by thrown or propelled object	4	354	3.1	88.5	6.3
Struck by falling object	4	223	3.1	55.8	4.0
Aggravated preexisting Conditions	3	25	2.3	8.3	0.4
Needle puncture/prick/stick	3	0	2.3	0.0	0.0
Sudden/unexpected movement of materials	3	38	2.3	12.7	0.7
Other	26	1,085	20.0	41.7	19.3
Total	**130**	**5,608**	**100**	**43.1**	**100**

* Lost workdays = Days away from work and days of restricted activity.



Appendix I-M

Maintenance of Equipment and Stores Injuries by Category 1999

Category	Number of Injuries	No. of Lost Workdays	% of Total Injuries	Avg. Lost Workdays* per Injury	% of Lost Days
Struck by object	11	472	12.1	42.9	9.5
Overexertion	8	276	8.8	34.5	5.6
Lost balance	7	705	7.7	100.7	14.2
Struck against object	7	183	7.7	26.1	3.7
Slipped, fell, stumbled, etc. due to object, ballast, spike, etc.	6	68	6.6	11.3	1.4
Struck by falling object	6	558	6.6	93.0	11.3
Collision/impact – auto, truck, bus, van, etc.	5	566	5.5	113.2	11.4
Defective/malfunctioning equipment	5	543	5.5	108.6	11.0
Repetitive motion - work processes	4	634	4.4	158.5	12.8
Other	32	943	35.2	29.5	19.1
Total	**91**	**4,948**	**100**	**54.4**	**100**

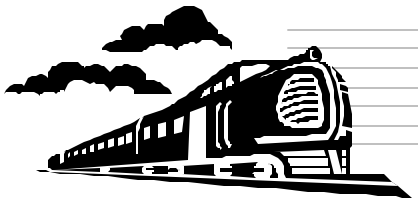
* Lost workdays = Days away from work and days of restricted activity.

Note - Not all railroad employee safety concerns fall within the jurisdiction of the Commission. Shop and office area safety is governed by California Occupational Safety & Health Administration (CAL OSHA). These accidents are reported monthly to the Commission, but the staff does not investigate these incidents unless they occur in areas where the Commission has jurisdiction.

Appendix I-N

Accidents by Track Type 1990-1999

Year	Main Line & Siding Accidents	Rail yard & Industry Accidents	Unknown/ Not stated	Total Train Accidents	% of Rail yard & Industry Accidents
1990	75	99	1	175	56.6
1991	80	83	0	163	50.9
1992	63	78	1	142	54.9
1993	64	76	0	140	54.3
1994	71	71	2	144	49.3
1995	54	72	0	126	57.1
1996	64	73	1	138	52.9
1997	72	50	1	123	40.7
1998	69	78	3	150	52.0
1999	69	102	2	173	59.0
Total	**681**	**782**	**11**	**1,474**	**53.1**



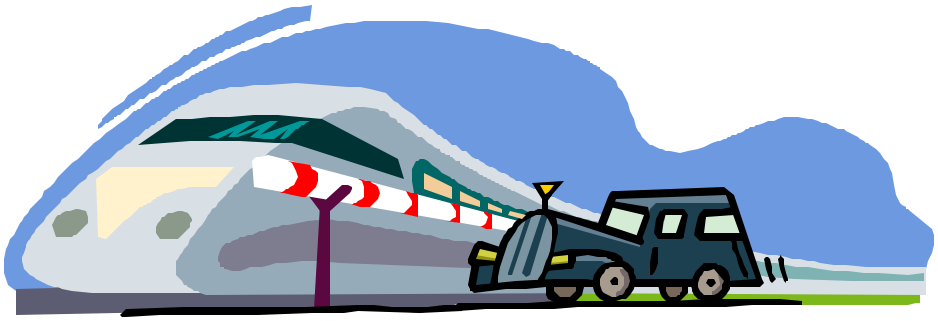
Appendix I-O

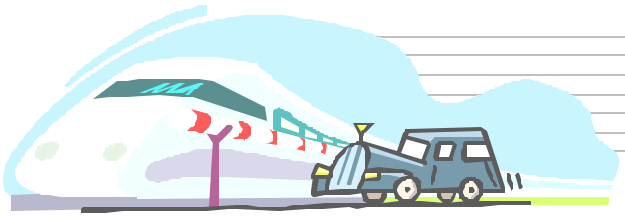
FRA Probable Reason For Injury/Illness
Event Circumstance Codes- Form F6180.51 and F6180.55a

01 - Aggravated pre-existing condition
02 - Apprehending/removing from property
03 - Assaulted by other
04 - Assaulted by coworker
05 - Bitten/stung by bee, spider, other insect
06 - Bitten by animal
07 - Bodily function/sudden movement, e.g., sneezing, twisting
08 - Caught in or compressed by hand tools
09 - Caught in or compressed by other machinery
10 - Caught in or crushed by materials
11 - Caught in or crushed in excavation, land slide, cave-in, etc.
12 - Caught in or compressed by powered hand tools
13 - Cave in, slide, etc.
14 - Climatic conditions, other (e.g., high winds)
15 - Climatic condition, exposure to environmental heat
16 - Climatic condition, exposure to environmental cold
17 - Collision - between on track equipment
18 - Collision/impact - auto, truck, bus, van, etc.
19 - Committing vandalism/theft
20 - Defective/malfunctioning equipment
21 - Derailment
22 - Electrical shock while operating welding equipment
23 - Electrical shock due to contact with 3rd rail, cantenary, pantograph
24 - Electrical shock, other (explain in narrative)
25 - Electrical shock from hand tool
26 - Exposure to fumes - inhalation
27 - Exposure to chemicals - external
28 - Exposure to poisonous plants
29 - Exposure to noise over time
30 - Exposure to noise - single incident
31 - Exposure to welding light
32 - Highway-rail collision/impact
33 - Horseplay, practical joke, etc.
34 - Lost balance
35 - Missed handhold, grab iron, step, etc.
36 - Needle puncture/prick/stick
37 - Other impacts - on track equipment
38 - Overexertion
39 - Pushed/shoved into/against
40 - Pushed/shoved onto
41 - Pushed/shoved from
42 - Ran into on-track equipment
43 - Ran into object/equipment
44 - Repetitive motion - work processes
45 - Repetitive motion - typing, keyboard, etc.
46 - Repetitive motion - tools
47 - Repetitive motion - other (describe in narrative)
48 - Rubbed, abraded, etc.
49 - Shot
50 - Slack action, draft, compressive buff/coupling
51 - Slipped, fell, stumbled, etc. due to irregular surface, e.g., depression, slope, etc.
52 - Slipped, fell, stumbled, etc. due to climatic condition (rain, snow, ice, etc.)
53 - Slipped, fell, stumbled, etc. on oil, grease, other slippery substance
54 - Slipped, fell, stumbled, etc. due to object, e.g., ballast, spike, material, etc.
55 - Stabbing, knifing, etc.
56 - Stepped on object
57 - Struck by thrown or propelled object
58 - Struck by object
59 - Struck by on-track equipment
60 - Struck by falling object
61 - Struck against object
62 - Sudden release of air
63 - Sudden/unexpected movement of material
64 - Sudden/unexpected movement of on-track equipment
65 - Sudden/unexpected movement of vehicle
66 - Sustained viewing
67 - Thrill seeking
68 – Caught, crushed, pinched, other
69 – On track equipment, other incidents
70 – Slipped, fell, stumbled, other
71 – Sudden unexpected movement, other
99 - Other (describe in narrative)

*Codes taken from the FRA Guide for Preparing Accident/Incident Reports, U.S. Dept. of Transportation

Appendix II
Railroad Grade Crossing & Trespasser Data





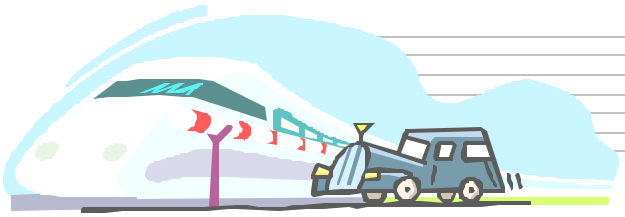
Appendices

Appendix II-A

Other Types Of Accidents - 1999

RAILROAD	Vehicle-Train Accidents Private Crossings		Accidents at Private & Public Crossings				TOTAL	
			Miscellaneous*		Pedestrian			
	No. of Accidents.	% of Total	No. of Accidents	% of Total	No. of Accidents	% of Total	No. of Accidents	% of Total
SCAX	2	6.9	1	16.7	0	0.0	3	8.8
BNSF	12	41.4	2	33.3	3	23.1	10	29.4
UPRR	7	24.1	0	0.0	5	38.5	8	23.5
ATK	5	17.2	1	16.7	3	23.1	12	35.3
OTHER	3	10.3	2	33.3	2	15.4	1	2.9
TOTAL	**29**	**100**	**6**	**100**	**13**	**100**	**34**	**100**

* Includes accidents with bicyclists, skateboarders or others that do not fall within the other categories.

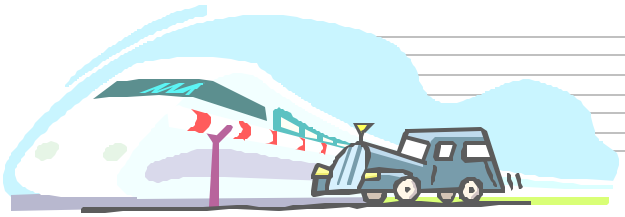


Appendix II-B

Vehicle-Train Accidents at Public Crossings By Light Condition and Weather Conditions 1999

By Light Condition	WEATHER					Total	Percent of Total
	Clear	Cloudy	Rain	Fog	Snow		
Dawn: No artificial	1	0	1	0	0	2	1.3
Artificial	0	0	0	0	1	1	0.6
Unknown	0	0	0	0	0	0	0.0
Subtotal	1	0	1	0	1	3	1.9
Daylight:	81	8	0	1	0	90	57.7
Dusk: No artificial	2	2	0	0	0	4	2.6
Artificial	3	0	0	0	0	3	1.9
Unknown	2	0	0	0	0	2	1.3
Subtotal	7	2	0	0	0	9	5.8
Dark: No artificial	17	0	1	0	0	18	11.5
Artificial	22	3	1	0	0	26	16.7
Unknown	8	1	0	0	1	10	6.4
Subtotal	47	4	2	0	1	54	34.6
Total	**136**	**14**	**3**	**1**	**2**	**156**	**100.0**
% of Total	**87.2**	**9.0**	**1.9**	**0.6**	**1.3**	**100.0**	

Note: "Artificial" refers to illumination with artificial lights.

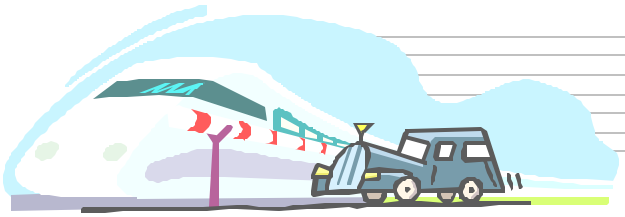


Appendix II-C

Vehicle-Train Accidents at Public Crossings
By Type of Warning Device and Nature of Accident
1999

Type of Warning Device and Nature of Accident	NUMBER OF ACCIDENTS					Total No. of Accidents/ Incidents	% of Total
	Struck by Head End of Train	Struck by Rear End of Train **	Ran Into Standing Train	Ran Into Moving Train	Unknown		
Automatic Gates*	89	7	3	14	5	118	75.6
Cantilever FLS	1	1	0	0	0	2	1.3
Standard FLS	0	0	0	0	0	0	0.0
Wigwags	0	0	0	0	0	0	0.0
Hwy. Traffic Signals	1	0	0	0	0	1	0.6
Audible	0	0	0	0	0	0	0.0
Crossbucks	0	1	0	1	0	2	1.3
Signs	0	0	0	0	0	0	0.0
No Protection	0	0	0	0	0	0	0.0
Not Stated	20	1	2	8	2	33	21.2
Total	**111**	**10**	**5**	**23**	**7**	**156**	**100.0**
% of Total	**71.2**	**6.4**	**3.2**	**14.7**	**4.5**	**100.0**	

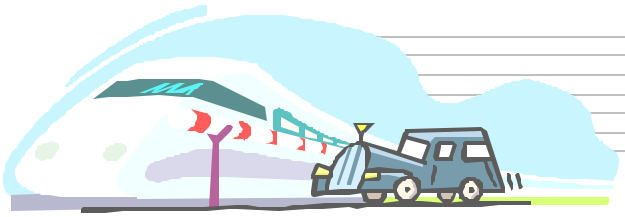
FLS -Flashing lights signal
* Automatic Gates are the choice of installation at crossings with high vehicular traffic volumes.
** Units being pushed by locomotive.



Appendix II-D

Vehicle-Train Accidents at Public Crossings By Speed of Vehicle & Train (Miles per Hour) - 1999

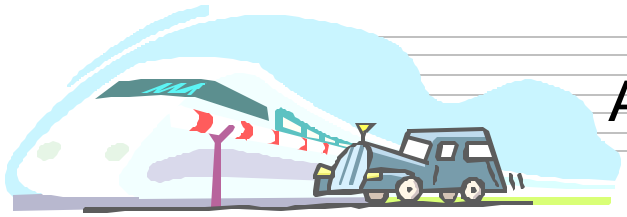
Vehicle Speed	TRAIN SPEED									ACCIDENTS	CASUALTIES	
	0	1-10	11-20	21-30	31-40	41-50	51-60	61+	Not Stated	Total	K	I
0	0	16	5	9	18	9	8	13	0	78	2	25
1-10	0	19	5	4	5	3	6	4	1	47	5	17
11-20	0	2	1	1	1	0	4	0	2	11	0	4
21-30	0	1	0	1	2	0	1	0	1	6	1	4
31-40	0	1	0	0	0	0	1	1	0	3	0	0
41-50	0	0	2	0	1	0	1	2	1	7	1	3
51-60	0	0	0	0	0	0	1	0	0	1	1	0
61+	0	0	0	0	0	0	0	0	0	0	0	0
Not Stated	0	2	0	0	1	0	0	0	0	3	0	2
Accident Total	**0**	**41**	**13**	**15**	**28**	**12**	**22**	**20**	**5**	**156**	**10**	**55**
Casualties												
Killed	0	0	0	0	0	1	4	5	0			
Injured	0	12	2	5	10	1	5	17	3			



Appendix II-E

Vehicle-Train Accidents at Public Crossings By Time of Day - 1999

TIME OF DAY	ACCIDENTS		CASUALTIES					
	No. of Accidents	% of Total	No. Killed	% of Total	No. Injured	% of Total	Total Casualties	% of Total
12:00 - 12:59 AM	6	3.8	0	0.0	2	3.6	2	3.1
1:00 - 1:59	4	2.6	0	0.0	1	1.8	1	1.5
2:00 -2:59	6	3.8	0	0.0	0	0.0	0	0.0
3:00 - 3:59	3	1.9	0	0.0	1	1.8	1	1.5
4:00 - 4:59	3	1.9	0	0.0	0	0.0	0	0.0
5:00 - 5:59	2	1.3	0	0.0	0	0.0	0	0.0
6:00 - 6:59	7	4.5	0	0.0	4	7.3	4	6.2
7:00 - 7:59	5	3.2	0	0.0	1	1.8	1	1.5
8:00 - 8:59	5	3.2	0	0.0	6	10.9	6	9.2
9:00 - 9:59	6	3.8	1	10.0	2	3.6	3	4.6
10:00 - 10:59	9	5.8	1	10.0	3	5.5	4	6.2
11:00 - 11:59	7	4.5	0	0.0	4	7.3	4	6.2
12:00 -12:59 PM	6	3.8	0	0.0	2	3.6	2	3.1
1:00 - 1:59	6	3.8	0	0.0	0	0.0	0	0.0
2:00 - 2:59	12	7.7	0	0.0	1	1.8	1	1.5
3:00 - 3:59	9	5.8	2	20.0	5	9.1	7	10.8
4:00 - 4:59	15	9.6	4	40.0	6	10.9	10	15.4
5:00 - 5:59	13	8.3	0	0.0	9	16.4	9	13.8
6:00 - 6:59	6	3.8	0	0.0	1	1.8	1	1.5
7:00 - 7:59	6	3.8	1	10.0	3	5.5	4	6.2
8:00 - 8:59	4	2.6	1	10.0	1	1.8	2	3.1
9:00 - 9:59	8	5.1	0	0.0	1	1.8	1	1.5
10:00 - 10:59	5	3.2	0	0.0	2	3.6	2	3.1
11:00 - 11:59	3	1.9	0	0.0	0	0.0	0	0.0
TOTAL	**156**	**100**	**10**	**100**	**55**	**100**	**65**	**100**



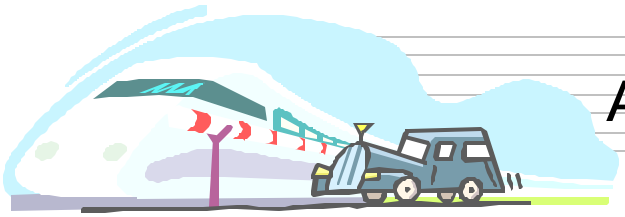
Appendices

Appendix II-F

Vehicle-Train Accidents at Public Crossings By Type of Accident and Class of Crossings – 1999

NATURE OF ACCIDENT	Crossing Class *	ACCIDENTS		CASUALTIES					
		Number	% of Total	Killed	% of Total	Injured	% of Total	TOTAL	% of Total
Struck by Head End of Train	A	108	69.2	9	90.0	31	56.4	40	61.5
	C	3	1.9	0	0.0	0	0.0	0	0.0
Subtotal		111	71.2	9	90.0	31	56.4	40	61.5
Struck by Rear End of Train**	A	8	5.1	0	0.0	9	16.4	9	13.8
	C	2	1.3	0	0.0	1	1.8	1	1.5
Subtotal		10	6.4	0	0.0	10	18.2	10	15.4
Ran into Standing Train	A	4	2.6	0	0.0	3	5.5	3	4.6
	C	1	0.6	0	0.0	0	0.0	0	0.0
Subtotal		5	3.2	0	0.0	3	5.5	3	4.6
Ran into Moving Train	A	19	12.2	1	10.0	8	14.5	9	13.8
	C	4	2.6	0	0.0	2	3.6	2	3.1
Subtotal		23	14.7	1	10.0	10	18.2	11	16.9
Unknown	A	2	1.3	0	0.0	1	1.8	1	1.5
	C	5	3.2	0	0.0	0	0.0	0	0.0
Subtotal		7	4.5	0	0.0	1	1.8	1	1.5
TOTAL		**156**	**100**	**10**	**100**	**55**	**100**	**65**	**100**

* For crossing class see Part II's Table 14 , page 9.
** Units being pushed by locomotive.

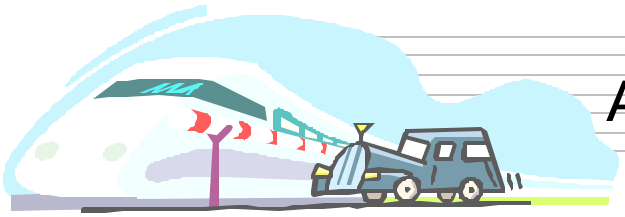


Appendices

Appendix II-G

Grade Separation Projects FY 2000-2002
Priority by Rank

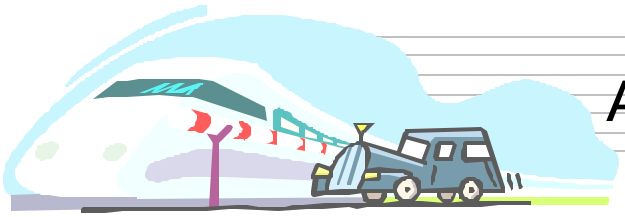
Rank	PUC ID	AGENCY	CROSSING LOCATION	Priority Index
1	3-22.4	LOS ANGELES CO	NOGALES ST	157.47
2	VY-69.33	LOS ANGELES CO	SIERRA HWY	153.23
3	2-885.6 2-885.6 2-885.75 2-885.77 2-885.95 2-886.2 2-886.4	BAKERSFIELD	BEALE-TRUXTON-BAKER (7 Xings) 21st St Gage St Beale Ave Truxtun Ave Baker St Tulare St Sonora St	152.95
4	B-517.4	MONTCLAIR	MONTE VISTA AVE	133.46
5	DA-30.5 DA-30.9 DA-32.1 4G-2.6 SA-32.65 DA-32.7 DA-32.8 4G-3.2 DAB-42.4B DA-29.9B	FREMONT	CONSOLIDATION (10 Xings) Walnut Ave Stevenson Blvd Paseo Padre Pkwy Paseo Padre Pkwy High St Main St Washington Blvd Washington Blvd Mowry Ave Mowry Ave	126.49
6	B-485.8	LOS ANGELES	VALLEY BLVD	123.38
7	3-23.4	LOS ANGELES CO	FAIRWAY DR	107.43
8	3-53.1	RIVERSIDE	JURUPA AVE	100.85
9	OR-182.9	IRVINE	SAND CANYON AVE	93.71
10	2-1112.2 2-1113.5 2-1114.7 2-1108.3	SAN JOAQUIN CO	CONSOLIDATION (4 Xings) Jack Tone Rd Kaiser Rd Mariposa Rd Wagner Rd	86.91
11	2-1114.7 2-1113.5	BNSF Alternate for San Joaquin	CONSOLIDATION (2 Xings) Mariposa Rd Kaiser Rd	72.48
12	B-413.7	PALMDALE	PALMDALE BLVD (SR138)	71.94
13	BBJ-497.28 2-153.1	LOS ANGELES CO	(2 Xings) Norwalk Blvd Norwalk Blvd	69.54
14	B-311.8	BAKERSFIELD	Q ST	68.29
15	B-613.0	COACHELLA	DILLON RD	68.08
16	4-84.8	LATHROP	LATHROP RD	64.34
17	3-17.2	LOS ANGELES CO	TURNBULL CANYON RD	63.45



Appendix II-G

Grade Separation Projects FY 2000-2002
Priority by Rank (Continued)

Rank	PUC ID	AGENCY	CROSSING LOCATION	Priority Index
18	E-64.0 E-65.2 E-64.7	SAN JOSE	CONSOLIDATION (3 Xings) Bailey Ave Richmond Ave Laguna Ave	63.02
19	B-280.2	DELANO	CECIL AVE	61.93
20	D-92.8	SAN JOAQUIN CO	WEST LANE	58.73
21	DA-32.1 4G-2.6 SA-32.65 DA-32.7 DA-32.8 4G-3.2	FREMONT Alternate	CONSOLIDATION (6 Xings) Paseo Padre Pkwy Paseo Padre Pkwy High St Main St Washington Blvd Washington Blvd	57.59
22	3A-3.4 2-147.1C	LOS ANGELES CO	(2 Xings) Bandini Blvd Bandini Blvd	56.18
23	101VY-1.17	LOS ANGELES	NORTH MAIN ST	56.09
24	E-417.93	CAMARILLO	ADOLFO RD	55.49
25	B-308.9	KERN COUNTY	OLIVE DR	55.13
26	BB-0.4B	WEST SACRAMENTO	WEST CAPITAL AVE Emergency Repair	54.37
27	D-82.1	LATHROP	LATHROP RD	54.29
28	2B-21.20	CORONA	MCKINLEY ST	53.61
29	101EB-484A 101VY-1.36A	LOS ANGELES	(2 Xings) North Spring St North Spring St	53.47
30	E-419.92	CAMARILLO	LAS POSAS/UPLAND	52.16
31	BK-495.4	DOWNEY	BROOKSHIRE AVE	51.84
32	4-132.9	SRTD	FLORIN RD	50.98
33	DA-36.2 4G-6.7	FREMONT	(2 Xings) WARREN AVE	49.85
34	B-393.9	KERN COUNTY	ROSAMOND BLVD	49.40
35	C-258.0	REDDING	SOUTH ST	47.36
36	2-889.5	SHAFTER	7TH STANDARD	47.17
37	PROPOSED	TORRANCE	DEL AMO BLVD	42.60
38	BBH-487.42	LOS ANGELES CO	SLAUSON AVE	42.43
39	108AE-177.0	TEHAMA COUNTY	SOUTH AVE	40.97
40	36-7.4	CHULA VISTA	E ST	40.62

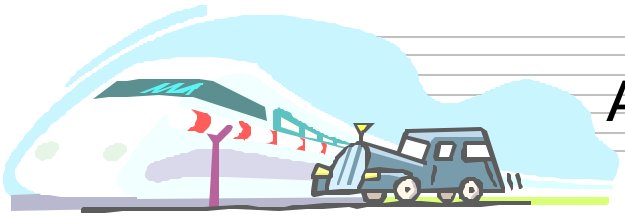


Appendix II-G

Grade Separation Projects FY 2000-2002
Priority by Rank (Continued)

Rank	PUC ID	AGENCY	CROSSING LOCATION	Priority Index
41	BB-0.4-B	WEST SACRAMENTO	WEST CAPITAL AVE Permanent	39.26
42	1C-238.3	TEHAMA COUNTY	BOWMAN RD	36.99
43	B-281.2	DELANO	GARCES HWY	33.34
44	VY-66.92	LOS ANGELES CO	AVENUE S	31.29
45	B-568.8	BANNING	HARGRAVE ST	30.62
46	2-1180.41-B	HERCULES	SYCAMORE AVE	27.43
47	3A-7.8	LOS ANGELES CO	FIRESTONE BLVD	27.32
48	BBH-492.6	LOS ANGELES CO	EL SEGUNDO	26.64
49	2-1180.40B	HERCULES	PALM AVE	24.12
50	PROPOSED	BAKERSFIELD	HAGEMAN RD	21.78
51	36-9.7	CHULA VISTA	PALOMAR ST	21.41
52	36-7.9	CHULA VISTA	H ST	20.40
53	PROPOSED	LOS ANGELES CO	FLORES ST	13.87
54	087-68-3	NAPA VALLEY WINE TRAIN	IMOLA AVE SR 121	13.23

(1) SRTD – Sacramento Regional Transit District



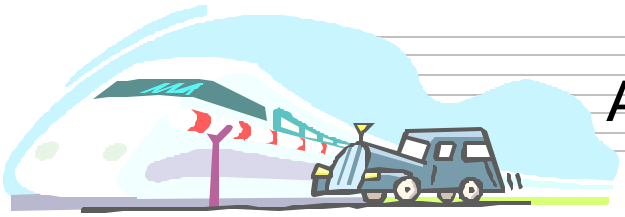
Appendices

Appendix II-H

Vehicle-Train Accidents at Public Crossings by Train Type - 1999

Type of Vehicle	TYPE OF TRAIN																				
	Freight Train			Light Car			Work Train			Yard/ Switching			Single/ Cut Cars			Passenger/ Commuter Train			Maint/ Inspect. Car		
	No	K	I	No	K	I	No	K	I	No	K	I	No	K	I	No	K	I	No	K	I
Automobile	63	0	20	2	0	0	0	0	0	4	0	1	1	0	0	19	4	4	0	0	0
Truck	5	1	3	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Truck/ Trailer	21	0	3	1	0	0	0	0	0	3	0	3	0	0	0	6	0	13	0	0	0
Pickup-Truck	7	1	2	2	0	1	0	0	0	1	0	0	0	0	0	6	2	1	1	0	0
Van	5	1	3	1	0	0	0	0	0	2	0	1	0	0	0	3	1	0	0	0	0
Bus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
School Bus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Motorcycle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**101**	**3**	**31**	**8**	**0**	**1**	**0**	**0**	**0**	**10**	**0**	**5**	**1**	**0**	**0**	**35**	**7**	**18**	**1**	**0**	**0**

Note: "No" refers to the number of accidents.
"I" refers to injured.
"K" refers to killed.

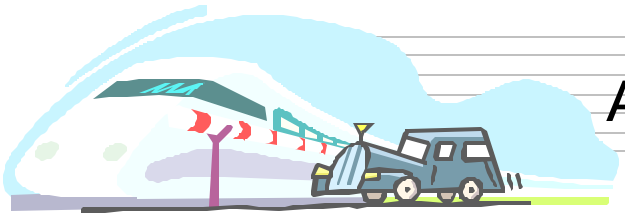


Appendices

Appendix II-I

Vehicle-Train Accidents by County at Public Crossings - 1999

County	Population		Motor Vehicle Registration		Accidents at Public Grade Xing		Total Casualties at Public Grade Xing	
	Total	% of Total	Total	% of Total	Total	% of Total	Total	% of Total
Alameda	1,438,500	4.26	1,027,354	4.40	8	5.1	2	3.1
Alpine	1,180	3.49E-03	1,428	0.01	0	0.0	0	0.0
Amador	33,350	0.10	34,381	0.15	0	0.0	0	0.0
Butte	200,200	0.59	152,600	0.65	1	0.6	0	0.0
Calaveras	38,300	0.11	42,851	0.18	0	0.0	0	0.0
Colusa	18,700	0.06	15,796	0.07	0	0.0	0	0.0
Contra Costa	924,400	2.74	711,717	3.05	7	4.5	1	1.5
Del Norte	27,600	0.08	18,266	0.08	0	0.0	0	0.0
El Dorado	151,300	0.45	135,939	0.58	0	0.0	0	0.0
Fresno	789,700	2.34	488,081	2.09	17	10.9	11	16.9
Glenn	26,850	0.08	21,551	0.09	0	0.0	0	0.0
Humboldt	125,900	0.37	102,327	0.44	0	0.0	0	0.0
Imperial	144,500	0.43	98,480	0.42	2	1.3	1	1.5
Inyo	18,200	0.05	18,594	0.08	0	0.0	0	0.0
Kern	645,900	1.91	417,645	1.79	6	3.8	1	1.5
Kings	125,800	0.37	67,207	0.29	1	0.6	0	0.0
Lake	55,300	0.16	54,196	0.23	0	0.0	0	0.0
Lassen	33,400	0.10	22,855	0.10	0	0.0	0	0.0
Los Angeles	9,714,900	28.77	5,926,920	25.40	34	21.8	12	18.5
Madera	115,600	0.34	77,416	0.33	4	2.6	3	4.6
Marin	245,800	0.73	211,078	0.90	0	0.0	0	0.0
Mariposa	16,000	0.05	17,492	0.07	0	0.0	0	0.0
Mendocino	86,400	0.26	77,412	0.33	0	0.0	0	0.0
Merced	205,700	0.61	133,671	0.57	8	5.1	8	12.3
Modoc	9,700	0.03	8,254	0.04	0	0.0	0	0.0
Mono	10,700	0.03	10,794	0.05	0	0.0	0	0.0
Monterey	387,500	1.15	266,608	1.14	3	1.9	8	12.3
Napa	123,400	0.37	101,637	0.44	4	2.6	2	3.1
Nevada	90,300	0.27	85,300	0.37	1	0.6	0	0.0
Orange	2,788,800	8.26	2,019,066	8.65	7	4.5	1	1.5
Placer	227,500	0.67	206,269	0.88	1	0.6	0	0.0
Plumas	20,300	0.06	22,403	0.10	1	0.6	0	0.0
Riverside	1,481,200	4.39	972,920	4.17	6	3.9	1	1.7
Sacramento	1,189,100	3.52	838,434	3.59	1	0.7	1	1.7



Appendices

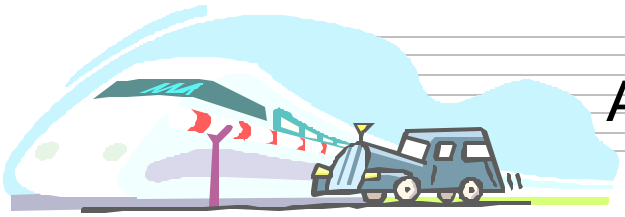
Appendix II-I

Vehicle-Train Accidents by County at Public Crossings – 1999 (Continued)

County	Population		Motor Vehicle Registration		Accidents at Public Grade Xings		Total Casualties at Public Grade Xings	
	Total	% of Total	Total	% of Total	Total	% of Total	Total	% of Total
San Benito	48,750	0.14	38,128	0.16	0	0.0	0	0.0
San Bernardino	1,660,200	4.92	1,070,746	4.59	9	5.8	1	1.5
San Diego	2,855,900	8.46	1,998,988	8.57	2	1.3	0	0.0
San Francisco	793,300	2.35	419,185	1.80	0	0.0	0	0.0
San Joaquin	557,100	1.65	368,090	1.58	5	3.2	3	4.6
San Luis Obispo	239,300	0.71	192,712	0.83	0	0.0	0	0.0
San Mateo	724,400	2.15	647,431	2.77	0	0.0	0	0.0
Santa Barbara	406,800	1.20	290,742	1.25	0	0.0	0	0.0
Santa Clara	1,709,600	5.06	1,304,697	5.59	4	2.6	5	7.7
Santa Cruz	252,100	0.75	195,756	0.84	0	0.0	0	0.0
Shasta	164,900	0.49	133,424	0.57	2	1.3	0	0.0
Sierra	3,250	0.01	3,518	0.02	0	0.0	0	0.0
Siskiyou	43,950	0.13	43,311	0.19	0	0.0	0	0.0
Solano	389,900	1.15	276,888	1.19	1	0.6	0	0.0
Sonoma	443,900	1.31	375,903	1.61	0	0.0	0	0.0
Stanislaus	435,500	1.29	302,071	1.29	9	5.8	2	3.1
Sutter	77,200	0.23	58,810	0.25	1	0.6	0	0.0
Tehama	55,200	0.16	41,920	0.18	0	0.0	0	0.0
Trinity	13,100	0.04	12,734	0.05	0	0.0	0	0.0
Tulare	363,400	1.08	229,544	0.98	3	1.9	1	1.5
Tuolumne	52,800	0.16	50,432	0.22	1	0.6	0	0.0
Ventura	744,900	2.21	566,039	2.43	0	0.0	0	0.0
Yolo	157,500	0.47	115,255	0.49	0	0.0	0	0.0
Yuba	60,200	0.18	41,473	0.18	1	0.6	0	0.0
Sub-Total	33,765,130	100	23,184,739	99.36	156	100	65	100
Out of State	0		149,079	0.64				
TOTAL	**33,765,130**	**100**	**23,333,818**	**100**	**156**	**100**	**65**	**100**

Source:California Department of Finance, population estimates as of January 1, 1999, <www.dof.ca.gov/html/Demograp/e-1table.htm>.

California Department of Motor Vehicles, Fee Paid Vehicles Currently Registered as January 1, 1999, <http://www.dmv.ca.gov/about/profile/99estfee.htm>.

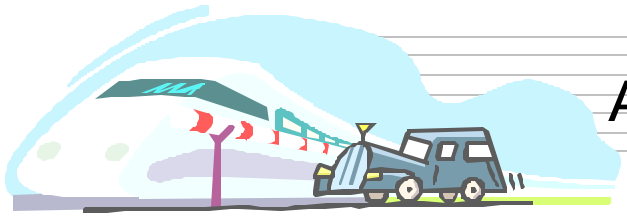


Appendices

Appendix II-J

Grade Crossing Sites with 3 or more Accidents (1995 – 1999)

COUNTY	CITY	HIGHWAY	COUNT
Alameda	Newark	Mowry Landing Road	3
	San Leandro	Marina & San Leandro	3
Fresno	Figarden	Shaw Avenue	3
	Fowler	Central Avenue	4
	Fresno	California Avenue	3
	Fresno	Harvey Avenue	4
	Selma	North Street	3
Kern	Tehachapi	Tehachapi Blvd.	3
Kings	Hanford	Excelsior Avenue	3
Los Angeles	City of Glendale	Doran Avenue	3
	City of Industry	Salt Lake Avenue	3
	Lynwood	Tweedy Blvd.	3
	Pacoima	Van Nuys Blvd	5
	Pomona	Temple Ave.	4
	Santa Fe Springs	Rosecrans & Marquardt Ave.	4
	Van Nuys	Coldwater Canyon Avenue	3
Merced	Merced	Bellevue Avenue	3
	Merced	Healy Road	5
Orange	Atwood	Orangethrope Ave.	3
		Imperial Hwy	3
	Santa Ana	McFadden Street	3
Riverside	Pedley	Bellegrave Ave.	3
	Pedley	Jurupa Road	4
San Bernardino	San Bernardino	Keenbrook Road	3
Santa Clara	San Jose	Bayshore Hwy	3
	San Jose	Richmond Avenue	3
San Diego	San Diego	Taylor Street	6
Stanislaus	Modesto	"B" Street	3
	Modesto	9th & "J" Streets	4
	Modesto	Patterson Road	3
Ventura	Moorpark	Los Angeles Avenue	3
	Oxnard	Rice Avenue	4

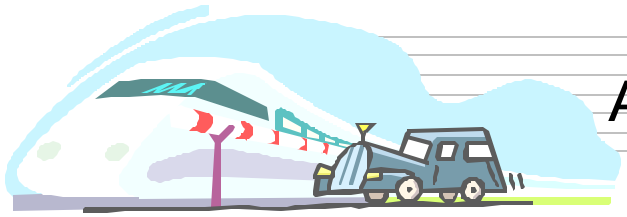


Appendices

Appendix II-K

Vehicle-Train Accidents/Incidents - 1999

RAILROAD	Xing ID	COUNTY	CITY	HIGHWAY	DATE	TIME	TOTAL KILLED	TOTAL INJURED
BNSF	028601R	MADERA	MADERA	AVE 12	1/2	9:35 AM	0	1
UP	748031T	ORANGE	ANAHEIM	WESTERN AVENUE	1/3	7:25 PM	0	0
CFNR	751466R	NAPA	VALLEJO	REDWOOD ST.	1/4	1:25 PM	0	0
ATK	751742R	CONTRA COSTA	MARTINEZ	MOCOCO ST	1/5	5:43 PM	0	0
UP	YARD	LOS ANGELES	WALNUT	BUSINESS PARKWAY	1/6	11:35 AM	0	0
UP	765923L	MERCED	MERCED	16TH/ MARTINLUTHERKG	1/11	12:15 AM	0	0
UP	748034N	ORANGE	ANAHEIM	HAZZARD STREET AT H	1/12	4:10 PM	0	0
BNSF	028473K	FRESNO	FRESNO	ORANGE AVE	1/13	9:20 PM	0	0
BNSF	028442L	FRESNO	LATON	CONEJO AVE	1/14	8:50 AM	0	4
SCAX	746016J	LOS ANGELES	SANTA CLARITA	13TH ST	1/16	3:30 PM	1	0
BNSF	026567E	ORANGE	PLACENTIA	LAKEVIEW AVE	1/18	10:00 AM	0	0
UP	750613X	FRESNO	KINGSBURG	384TH AVE	1/18	2:15 PM	0	0
NVRR	751370B	NAPA	NAPA	MAIN ST.	1/19	6:15 PM	0	1
ATK	751730W	CONTRA COSTA	MARTINEZ	AMMOCO OIL CROSSING	1/20	6:45 PM	0	0
BNSF	027754R	LOS ANGELES	COMMERCE	WASHINGTON BLVD	1/24	6:00 PM	0	0
UP	753188J	NEVADA	TRUCKEE	UNNUMBERED COUNTY RD	1/26	3:52 AM	0	0
UP	810883N	LOS ANGELES	WALNUT	FAIRWAY DR	1/27	10:55 PM	0	1
UP	757186J	FRESNO	MALAGA	CENTRAL AVE	1/28	11:55 PM	0	0
UP	757186J	FRESNO	FOWLER	CENTERAL STREET	1/29	12:05 AM	0	0
UP	750619N	FRESNO	KINGSBURG	SIERRA ROAD	1/31	7:45 AM	0	0
BNSF	026027J	SAN BERNARDINO	AMBOY	SALTUS ROAD	2/4	10:00 AM	0	0
UP	750703W	FRESNO	SELMA	NORTH STREET	2/4	3:53 PM	1	0
BNSF	026006R	SAN BERNARDINO	NEEDLES	RIVER ST.	2/7	5:40 PM	0	0
BNSF	026576D	ORANGE	PLACENTIA	MELROSE ST.	2/7	8:20 AM	0	0
UP	835048K	BUTTE	OROVILLE	COX	2/8	6:30 AM	0	0
SCAX	745998F	LOS ANGELES	LOS ANGELES	BELLAIR AVE	2/11	4:50 PM	0	0
SJVR	756761M	TULARE	IVANHOE	ROAD 336/AVE 152	2/11	10:30 AM	0	1
UP	760710J	RIVERSIDE	INDIO	MONROE STREET	2/14	1:10 PM	0	0
UP	757186J	FRESNO	MALAGA	CENTRAL AVENUE	2/16	7:58 PM	0	2
UP	834177W	SAN JOAQUIN	STOCKTON	E SCOTTS AVE	2/17	10:54 AM	0	0
ATK	749712Y	ALAMEDA	OAKLAND	HIGH STREET	2/19	10:05 AM	1	0
UP	865288Y	STANISLAUS	MODESTO	HOSMER RD	2/20	5:55 PM	0	0
UP	752760S	SACRAMENTO	SACRAMENTO	ELDER CREEK ROAD	2/22	5:50 PM	0	1
UP	753250S	YUBA	SHERIDAN	HIGHWAY 65	2/25	9:40 PM	0	0
UP	747945N	ORANGE	ANAHEIM	BELLFLOWER BLVD	2/28	6:40 PM	0	0
UP	865219R	STANISLAUS	MODESTO	9TH STREET	3/4	4:25 PM	0	0
UP	834251Y	ALAMEDA	OAKLAND	DAVIS ST	3/5	2:40 PM	0	0
ATK	749965G	SANTA CLARA	SANTA CLARA	CITY; AGNEW RD	3/12	4:20 PM	0	0

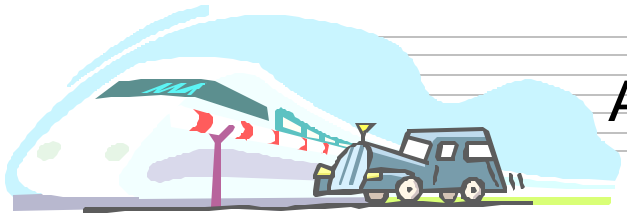


Appendices

Appendix II-K

Vehicle-Train Accidents/Incidents - 1999 (Continued)

RAILROAD	Xing ID	COUNTY	CITY	HIGHWAY	DATE	TIME	TOTAL KILLED	TOTAL INJURED
BNSF	028582N	MADERA	FRESNO	PALM AVE.	3/12	8:35 PM	1	0
PCMZ	755013M	SANTA CLARA	MOUNTAIN VIEW	CITY; RENGSTORFF AVE	3/12	5:40 PM	0	0
UP	765942R	MERCED		SANDY MUSH ROAD	3/15	10:24 PM	0	0
UP	747689A	LOS ANGELES	COMPTON	ALONDRA BLVD	3/17	9:19 AM	0	0
UP	757420X	KERN	EDISON	TOWER LINE ROAD	3/18	4:40 PM	0	0
UP	747594S	LOS ANGELES	VERNON	ALAMEDA STREET	3/22	11:25 AM	0	0
UP	750643P	LOS ANGELES	PALMDALE	SIERRA HIGHWAY	3/25	12:17 AM	0	0
BNSF	028704R	MERCED	ATWATER	BUHACH ROAD	3/26	4:20 PM	1	3
UP	026100E	SAN BERNARDINO	SAN BERNARDINO	KEENBROOK ROAD	3/26	8:00 PM	0	1
UP	765937U	MERCED	LIVINGSTON	HEALY RD	3/26	10:30 AM	0	1
UP	747838Y	LOS ANGELES	VERNON	55TH STREET	3/31	9:05 PM	0	0
UP	765937U	MERCED	MERCED	HEALY ROAD	3/31	5:34 PM	0	0
UP	757253B	KERN	MONOLITH	WILLIAMSON ROAD	4/3	8:55 AM	0	0
BNSF	028379W	KERN	SHAFTER	HWY 43 @ (REINA RD)	4/11	1:50 AM	0	0
UP	747221T	SAN BERNARDINO	REDLANDS	ALESSANDRO	4/13	12:30 AM	0	0
UP	756970V	TULARE	GOSHEN	AVENUE 304	4/20	4:05 PM	0	0
CFNR	751326N	NAPA	AMERICAN CANYON	GREEN ISLAND ROAD	4/24	8:50 AM	0	1
UP	756979G	TULARE	TULARE	TULARE STREET	5/1	2:00 AM	0	0
ATK	028755B	STANISLAUS	RIVERBANK	CLARIBEL ROAD	5/8	9:18 PM	0	0
UP	753601N	LOS ANGELES	CITY OF INDUSTRY	FULLERTON ROAD	5/13	2:38 AM	0	0
ATK	745997Y	LOS ANGELES	LOS ANGELES	COLDWATER CNYN RD	5/17	4:01 PM	0	0
UP	810977P	RIVERSIDE	MIRA LOMA	BEL BRAVE	5/17	11:08 PM	0	0
UP	833840K	SANTA CLARA	SAN JOSE	SOUTH 24TH STREET	5/20	7:50 PM	0	1
UP	760848K	IMPERIAL	IMPERIAL	NECKEL ROAD	5/22	5:30 PM	0	0
UP	755206L	MONTEREY	WATSONVILLE	CARPENTERIA BLVD.	5/25	1:15 PM	0	0
BNSF	028374M	KERN	BAKERSFIELD	CALLOWAY ROAD	5/26	4:25 AM	0	0
UP	750506H	SHASTA	REDDING	HOSPITAL LANE	5/27	2:00 PM	0	0
SJVR	750817J	KINGS	HANFORD	9TH AVE/LACEY BLVD	5/28	2:25 PM	0	0
ATK	028561V	FRESNO	FRESNO	ALLEY	6/3	2:04 PM	0	1
BNSF	026138B	SAN BERNARDINO	RIALTO	LILAC AVENUE	6/9	11:20 AM	0	0
BNSF	028550H	FRESNO	FRESNO	MARIPOSA ST	6/12	12:35 AM	0	0
UP	749929L	ALAMEDA	UNION CITY	ALVARADO BLVD.	6/19	3:36 AM	0	0
UP	834154P	ALAMEDA	OAKLAND	EL DORADO ROAD	6/22	6:46 PM	0	0
SCAX	745989G	LOS ANGELES	LOS ANGELES	BALBOA BLVD	6/23	5:33 PM	0	0
BNSF	027583S	SAN DIEGO	SAN MARCOS	BARHAM AVE	6/25	12:27 PM	0	0
BNSF	028781R	SAN JOAQUIN	ESCALON	HWY 120 (YOSOMITE)	6/26	10:20 PM	0	0
UP	865360M	SAN JOAQUIN	ESCALON	H-120/FRENCH CAMP RD	6/26	10:20 AM	0	0
NVRR	751363R	NAPA	NAPA	FIRST ST.	6/29	10:50 AM	0	0
UP	746846M	LOS ANGELES	LOS ANGELES	WORTH STREET	6/29	7:30 AM	0	0

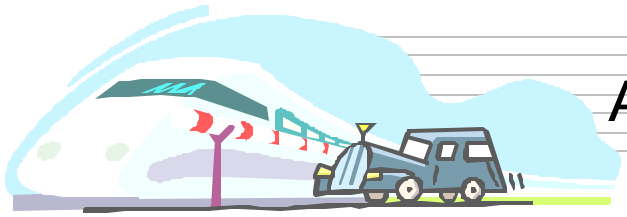


Appendices

Appendix II-K

Vehicle-Train Accidents/Incidents - 1999 (Continued)

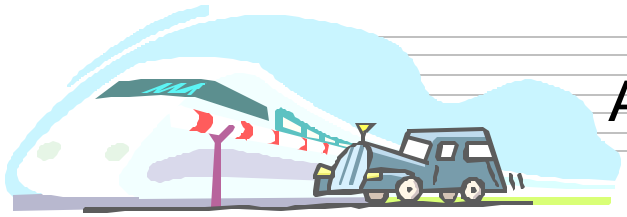
RAILROAD	Xing ID	COUNTY	CITY	HIGHWAY	DATE	TIME	TOTAL KILLED	TOTAL INJURED
ATK	028601R	MADERA		AVE 12	7/6	9:33 AM	1	0
UP	865243S	SAN JOAQUIN	ESCALON	CARROLTON ROAD	7/15	3:10 PM	0	3
ATK	028753M	STANISLAUS		PLAINVIEW AVE	7/16	7:30 PM	1	0
UP	811069K	LOS ANGELES	CITY OF INDUSTRY	DON JULIAN	7/16	12:30 AM	0	2
ATK	752261B	MONTEREY	SALINAS	GRAVES ROAD	7/19	12:12 PM	0	0
ATK	752887F	SACRAMENTO	SACRAMENTO	POWER INN ROAD	7/21	11:08 PM	0	0
UP	751177P	ALAMEDA	BERKELEY	ADDISON STREET	7/21	10:40 PM	0	0
SCAX	746016J	LOS ANGELES	SANTA CLARITA	13TH ST	7/23	2:32 PM	0	0
UP	746972G	SAN BERNARDINO	FONTANA	SAN BERNARDINO AVENU	8/6	9:45 PM	0	0
ATK	751181E	ALAMEDA	BERKELEY	VIRGINIA STREET	8/9	11:03 AM	0	1
UP	811005Y	RIVERSIDE		JURUPA AVENUE	8/19	6:10 AM	0	0
UP	765943X	MADERA	CHOWCHILLA	VISTA ROAD	8/22	2:35 AM	0	0
LAJ	860194F	LOS ANGELES	LOS ANGELES	SOTO STREET	8/24	11:23 AM	0	0
UP	750504U	SHASTA	REDDING	BONNEYVIEW HIGHWAY	8/26	4:58 PM	0	0
UP	746880U	LOS ANGELES	SAN GABRIEL	MISSION DRIVE	8/28	6:00 AM	0	0
ATK	028517H	FRESNO	FRESNO	CALIFORNIA AVE	8/30	3:07 PM	0	1
PCMZ	755151B	SANTA CLARA	SAN JOSE	CITY ; RICHMOND AV	8/31	6:29 AM	0	4
ATK	028570U	FRESNO	FRESNO	HAMMOND AVE	9/3	6:55 AM	0	0
BNSF	027656A	LOS ANGELES	SANTA FE SPRINGS	ROSECRANS BLVD	9/3	2:05 AM	0	0
SJVR	750955X	KERN	BAKERSFIELD	VIRGINIA AVE	9/9	9:15 PM	0	0
BNSF	028688J	CONTRA COSTA	MERCED	BELLVUE ROAD	9/12	4:33 AM	0	0
UP	765942R	STANISLAUS	TURLOCK	WEST OLIVE STREET	9/18	9:31 AM	0	1
UP	029556C	STANISLAUS	OAKDALE	SNEDIGAR STREET	9/22	12:30 PM	0	0
UP	747609E	LOS ANGELES	VERNON	38TH & ALAMEDA ST	9/22	5:45 PM	0	0
SJVR	757157Y	FRESNO	FRESNO	CHURCH AVE	9/23	12:43 PM	0	0
BNSF	027950X	LOS ANGELES	HUNTINGTON PARK	SLAUSON & ALAMEDA	9/27	10:20 AM	0	1
BNSF	YARD	CONTRA COSTA		MARINA WAY	9/28	4:45 PM	0	1
SCAX	027656A	LOS ANGELES	SANTA FE SPRINGS	ROSECRANS	9/30	4:27 PM	1	1
UP	752418E	SAN BENITO	HOLLISTER	4TH STREET CROSSING	9/30	7:45 PM	0	0
SDNX	026821E	SAN DIEGO	CARLSBAD	ELM AVE	10/6	1:20 AM	0	0
ATK	028647E	MERCED	PLANADA	CHILDS AVE	10/8	4:26 PM	1	1
BNSF	028456U	FRESNO	FRESNO	ADAMS AVE.	10/8	9:55 AM	0	0
UP	747705G	LOS ANGELES		GARDENA BLVD	10/8	3:40 PM	0	0
UP	747594S	LOS ANGELES	LOS ANGELES	ALAMEDA & 25TH ST	10/9	7:55 AM	0	0
UP	765937U	MERCED	MERCED	HEALY ROAD	10/12	4:20 PM	0	0
ATK	028560N	FRESNO	FRESNO	WHITE AVE	10/23	1:59 PM	0	0
UP	753289V	SUTTER	YUBA CITY	REDNALL ROAD	10/25	5:43 PM	0	0
UP	747572S	LOS ANGELES	LOS ANGELES	16TH ST	10/26	8:05 PM	0	0
UP	747602G	LOS ANGELES	LOS ANGELES	25TH STREET	10/29	9:43 PM	0	1
UP	810913D	SAN BERNARDINO	ONTARIO	MILLIKEN AVENUE	10/29	1:00 PM	0	0



Appendix II-K

Vehicle-Train Accidents/Incidents - 1999 (Continued)

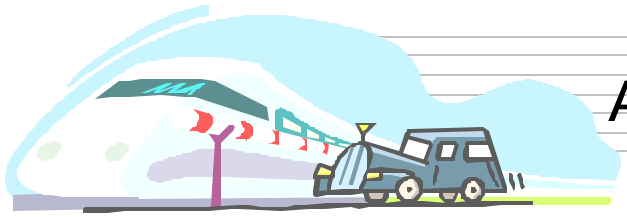
RAILROAD	Xing ID	COUNTY	CITY	HIGHWAY	DATE	TIME	TOTAL KILLED	TOTAL INJURED
UP	751294K	SOLANO	FAIRFIELD	EAST TABER AVENUE	11/1	5:15 AM	0	0
ATK	752192V	MONTEREY	SALINAS	SPENCE ROAD	11/4	5:55 PM	0	8
UP	747948J	LOS ANGELES	BELLFLOWER	ARTESIA BLVD	11/5	3:15 PM	0	0
UP	751678U	CONTRA COSTA	RICHMOND	CUTTING BLVD.	11/5	9:15 PM	0	0
UP	756949P	KERN	BAKERSFIELD	7TH STANDARD ROAD	11/5	7:45 AM	0	1
SCAX	810910H	SAN BERNARDINO	ONTARIO	VINEYARD AVE	11/8	2:32 PM	0	0
UP	747622T	LOS ANGELES	LOS ANGELES	VERNON AVENUE	11/8	2:45 PM	0	0
UP	760722D	RIVERSIDE	THERMAL	HIGHWAY 111	11/8	7:30 AM	0	0
UP	752868B	STANISLAUS	MODESTO	B ST	11/10	6:10 PM	0	0
UP	865259N	SAN JOAQUIN	ESCALON	BRENNAN AVE	11/10	4:00 PM	0	0
ATK	753140G	PLACER		CHUBB ROAD	11/15	2:12 PM	0	0
BNSF	747728N	LOS ANGELES	LOS ANGELES	MCFARLAND	11/16	12:25 PM	0	1
BNSF	028517H	FRESNO	FRESNO	CALIFORNIA AVE	11/17	8:25 AM	0	1
ATK	749946C	ALAMEDA	NEWARK	CITY ; MOWRY AVE	11/21	1:40 PM	0	0
PHL	747758F	LOS ANGELES	LOS ANGELES	FIG. & HARRY BRIDGES	11/26	11:21 AM	0	2
SERA		TUOLUMNE	SONORA	SANGUINETTI ROAD	11/26	2:45 PM	0	0
ATK	028657K	MERCED	MERCED	TOWER RD	11/27	4:20 PM	1	0
UP	811007M	RIVERSIDE	RIVERSIDE	MOUNTAIN VIEW	11/28	7:36 PM	0	0
ATK	026697B	ORANGE	SANTA ANA	FAIRHAVEN AVE	11/29	8:17 PM	0	0
UP	746890A	LOS ANGELES	EL MONTE	BALDWIN AVENUE	11/29	4:58 AM	0	0
BNSF	026581A	ORANGE	FULLERTON	RAYMOND AVE	11/30	12:15 PM	0	1
UP	746919V	LOS ANGELES	POMONA	TEMPLE AVE	12/2	6:44 AM	0	0
UP	760848K	IMPERIAL	IMPERIAL	NECKEL ROAD	12/2	11:30 AM	0	1
UP	760731C	RIVERSIDE	THERMAL	62ND AVENUE	12/5	1:55 AM	0	1
AL	838114F	PLUMAS	CHESTER	HIGHWAY 36	12/7	6:42 AM	0	0
UP	810885C	LOS ANGELES	WALNUT	LEMON ROAD	12/8	2:35 AM	0	0
UP	810993Y	RIVERSIDE	RIVERSIDE	CRESTMORE ST	12/8	1:01 AM	0	0
MET	853843K	STANISLAUS	MODESTO	HWY 132 & MARIPOSA N	12/10	3:45 PM	0	0
UP	752868B	STANISLAUS	MODESTO	B STREET	12/10	2:00 PM	0	0
ATK	028564R	FRESNO	FRESNO	HARVEY AVE	12/11	10:11 PM	0	1
BNSF	027950X	LOS ANGELES	HUNTINGTON PARK	ALAMEDA CROSSING	12/12	5:20 PM	0	0
UP	747030H	SAN BERNARDINO	SAN BERNARDINO	FOOTHILLS BLVD	12/13	2:21 AM	0	0
UP	761600C	LOS ANGELES	BELL	PINE AVE	12/14	3:51 PM	0	1
UP	752887F	SACRAMENTO	FLORIN	POWER INN ROAD	12/16	3:53 AM	0	1
BNSF	027657G	LOS ANGELES	LA MIRADA	VALEY VIEW	12/21	5:40 AM	0	0
ATK	029685S	CONTRA COSTA	ANTIOCH	MINIKER DR	12/22	3:05 PM	0	0
BNSF	296855S	CONTRA COSTA		MINIKER ROAD	12/22	5:10 PM	0	0
ATK	749581X	ALAMEDA	OAKLAND	CITY ; GROVE ST	12/29	9:48 AM	0	0
SCAX	810979D	RIVERSIDE	PEDLEY	JURUPA RD	12/29	2:37 PM	0	0



Appendix II-K

Vehicle-Train Accidents/Incidents, Private- 1999 (Continued)

RAILROAD	Xing ID	COUNTY	CITY	HIGHWAY	DATE	TIME	TOTAL KILLED	TOTAL INJURED
BNSF	028772S	STANISLAUS	RIVERBANK	PRIVATE	1/6	2:03 PM	4	0
ATK	751738B	CONTRA COSTA	MARTINEZ	PRIVATE CROSSING	1/14	11:10 AM	0	0
BNSF	028053F	LOS ANGELES	EL SEGUNDO	PRIVATE	2/8	5:20 AM	0	0
BNSF	028136U	LOS ANGELES	LONG BEACH	PRIVATE	2/15	12:15 AM	0	0
BNSF	YARD	CONTRA COSTA		PRIVATE	2/25	2:30 PM	0	0
UP	865350G	SAN JOAQUIN	MANTECA	PRIVATE-UNNAMED ROAD	3/4	7:09 AM	0	1
ATK	755157S	SANTA CLARA	MORGAN HILL	PRIVATE	3/11	10:55 AM	0	1
UP	760704F	RIVERSIDE		THOUSAND PALMS BLVD	3/25	2:30 AM	0	0
SCAX	914504B	LOS ANGELES	SANTA CLARITA	RAINBOW GLEN	4/5	8:30 AM	0	0
BNSF	YARD	LOS ANGELES		PRIVATE	4/19	4:30 AM	0	0
BNSF	027880K	LOS ANGELES	VERNON	PRIVATE	4/23	8:50 PM	0	0
SCAX	026743A	ORANGE	SANTA ANA	MCFADDEN ST	4/30	4:27 PM	0	0
ATK	752191N	MONTEREY	SALINAS	PRIVATE CROSSING	5/7	5:58 PM	0	2
UP	752186S	MONTEREY	SALINAS	HWY 101- ABOTT STREE	5/28	9:05 AM	0	0
UP	760681B	RIVERSIDE	BEAUMONT	NO NAME PRIVATE ROAD	5/30	2:55 AM	0	1
BNSF	YARD	SAN DIEGO		YARD CROSSING	7/12	7:25 AM	0	0
UP	768230A	SANTA CRUZ	SANTA CRUZ	BEACH STREET	7/12	1:10 PM	0	0
BNSF	YARD	LOS ANGELES		PRIVATE	7/21	12:10 PM	0	0
UP	745870K	VENTURA	SANTA PAULA	PRIVATE	7/23	1:25 PM	0	0
BNSF	NOTASGN	RIVERSIDE		PRIVATE	7/29	10:00 AM	0	0
NVRR	751437F	NAPA	ST HELENA	UN-NAMED STREET	8/1	10:22 AM	0	2
ATK	745880R	VENTURA	CAMARILLO	PRIVATE	8/2	10:25 AM	0	0
BNSF	YARD	LOS ANGELES		HOBART YARD CROSSING	8/4	6:30 AM	0	0
PHL	747723E	LOS ANGELES	LOS ANGELES	PRIVATE	8/9	8:30 AM	0	0
BNSF	YARD	LOS ANGELES		YARD CROSSING	9/23	8:30 AM	0	0
BNSF	YARD	LOS ANGELES		PRIVATE	10/14	8:00 AM	0	0
ATK	745886G	VENTURA		PRIVATE ROAD	11/7	4:20 PM	1	0
UP	760675X	RIVERSIDE		EASTSIDE RANCH ROAD	12/18	3:24 PM	0	1
SJVR		FRESNO	CLOVIS	CLOVIS MAIN	12/30	8:15 AM	0	0



Appendices

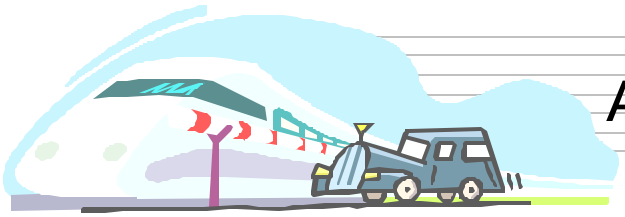
Appendix II-L

Pedestrian-Train Accidents/Incidents - 1999

RAILROAD	Xing ID	COUNTY	CITY	HIGHWAY	DATE	TIME	TOTAL KILLED	TOTAL INJURED
BNSF	028564R	FRESNO	FRESNO	HARVEY AVE	1/10	12:30 PM	0	1
UP	833992G	SAN JOAQUIN	STOCKTON	HAMMER LANE	2/18	2:04 PM	1	0
UP	757330Y	FRESNO	FRESNO	TULARE ST.	4/6	11:10 AM	1	0
ATK	749585A	ALAMEDA	OAKLAND	CITY; BROADWAY	5/11	4:50 PM	1	0
UP	750635X	KERN	ROSAMOND	ROSAMOND AVENUE	5/20	1:30 AM	0	1
UP	766154C	MERCED	LIVINGSTON	MAIN STREET	6/4	11:38 AM	1	0
BNSF	027979V	LOS ANGELES	LOS ANGELES	SLAUSON AVE	6/10	2:30 PM	0	1
BNSF	026516U	RIVERSIDE	RIVERSIDE	BUCHANAN STREET	6/29	6:00 PM	1	0
UP	752767P	SAN JOAQUIN	STOCKTON	EAST MAIN STREET	7/23	4:10 PM	0	1
ATK	026852D	SAN DIEGO	SAN DIEGO	ROSECRANS AVE	8/9	8:15 AM	1	0
PCMZ	754891C	SAN MATEO	BURLINGAME	CITY ; HOWARD AVE	10/22	4:45 PM	1	0
SDNX	026852D	SAN DIEGO	SAN DIEGO	ROSECRANS AVE	12/21	8:38 AM	0	1
ATK	029617R	SAN JOAQUIN	STOCKTON	LINCOLN ST	12/27	9:42 AM	0	1

Miscellaneous-Train Accidents/Incidents - 1999

RAILROAD	Xing ID	COUNTY	CITY	HIGHWAY	DATE	TIME	TOTAL KILLED	TOTAL INJURED
ATK	749744E	ALAMEDA	SAN LEANDRO	HALCYON	5/12	3:15 PM	1	0
BNSF	026501E	RIVERSIDE	RIVERSIDE	MADISON ST	9/8	10:15 PM	1	0
BNSF	028576K	FRESNO	FRESNO	WELDON STREET	6/24	5:10 PM	0	1
PCMZ	754991G	SAN MATEO	MENLO PARK	CITY; RAVENSWOOD AVE	12/8	7:36 AM	0	1
PCMZ	755099Y	SANTA CLARA	SAN JOSE	CITY ; VIRGINIA ST	7/8	7:56 PM	0	1
SCAX	746052E	LOS ANGELES	LOS ANGELES	VAN NUYS BLVD	1/22	7:50 AM	0	1



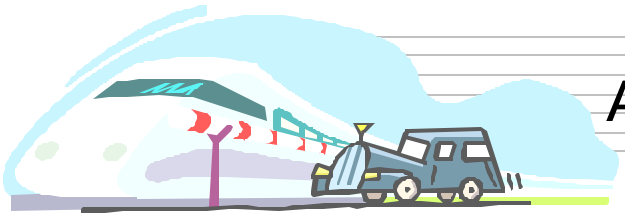
Appendices

Appendix II-M

Trespasser-Train Accidents/Incidents - 1999

Railroad	County	Date	Time	Killed	Injured	Physical Act
UP	LOS ANGELES	1/2	5:30 PM		1	walking
UP	SACRAMENTO	1/2	11:55 PM		1	walking
UP	YUBA	1/10	5:55 PM	1		sitting
ATK	ORANGE	1/18	9:20 AM	1		walking
SDNX	SAN DIEGO	1/18	6:30 PM	1		laying
UP	SAN JOAQUIN	1/20	7:00 PM	1		riding
UP	SACRAMENTO	1/25	5:20 PM		1	reaching
ATK	CONTRA COSTA	2/2	2:20 PM	1		standing
BNSF	LOS ANGELES	2/7	2:52 PM		1	crossing or crawling under
UP	ALAMEDA	2/8	8:50 AM	1		walking
UP	IMPERIAL	2/8	8:45 PM	1		laying
UP	ALAMEDA	2/9	2:15 PM		1	laying
UP	PLACER	2/14	1:45 PM	1		climbing over/on
UP	IMPERIAL	2/19	2:00 AM		1	riding
UP	SANTA CLARA	2/21	3:45 PM		1	riding
UP	RIVERSIDE	2/21	1:40 PM		1	riding
PCMZ	SANTA CLARA	2/22	5:06 PM	1		walking
UP	SAN JOAQUIN	2/27	1:00 PM	1		walking
UP	SACRAMENTO	3/2	4:10 PM	1		walking
UP	SAN LUIS OBISPO	3/4	5:00 AM		1	walking
UP	ALAMEDA	3/6	2:00 AM		1	laying
UP	KERN	3/8	11:28 PM		1	walking
ATK	SAN DIEGO	3/8	11:35 PM	1		laying
UP	SAN JOAQUIN	3/12	8:00 PM	1		laying
UP	LOS ANGELES	3/18	3:10 PM		1	walking
ATK	ORANGE	3/18	1:44 PM	1		walking
ATK	YOLO	3/19	3:25 PM	1		walking
UP	SAN BERNARDINO	3/19	2:45 PM	1		standing
UP	IMPERIAL	3/19	10:35 AM	1		laying
UP	ALAMEDA	3/20	7:45 PM	1		walking
UP	SACRAMENTO	3/23	5:45 AM	1		riding
ATK	LOS ANGELES	3/26	7:38 PM	1		walking
UP	SISKIYOU	4/4	1:00 PM	1		standing
ATK	SANTA BARBARA	4/5	10:50 AM	1		walking
SDNX	SAN DIEGO	4/10	4:00 PM	1		sitting
UP	IMPERIAL	4/14	8:00 AM	1		climbing over/on
SERA	TUOLUMNE	4/22	2:25 PM		1	laying

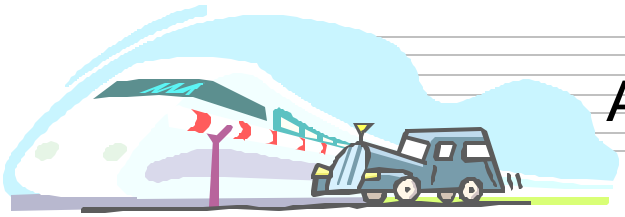
*PCMZ CALTRAIN Commuter Service



Appendix II-M

Trespasser-Train Accidents/Incidents - 1999 (Continued)

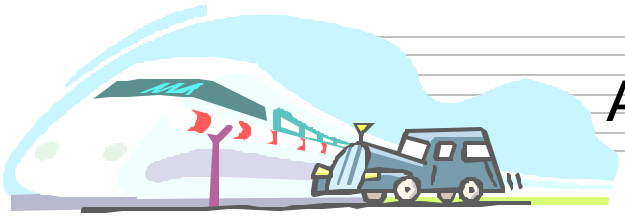
Railroad	County	Date	Time	Killed	Injured	Physical Act
UP	VENTURA	4/25	7:30 AM	1		getting on
UP	ALAMEDA	4/29	2:10 PM	1		climbing over/on
UP	BUTTE	5/3	8:26 PM	1		laying
UP	SHASTA	5/5	7:30 AM	1		walking
UP	ALAMEDA	5/5	10:25 AM	1		laying
ATK	PLACER	5/11	4:55 PM	1		laying
PCMZ	SAN MATEO	5/11	9:40 PM	1		laying
UP	SAN JOAQUIN	5/20	3:45 PM		1	driving (motor vehicle, forklift, etc.)
BNSF	FRESNO	5/20	8:43 AM	1		laying
UP	LOS ANGELES	6/8	7:34 PM	1		walking
UP	FRESNO	6/9	1:35 AM	1		laying
UP	SANTA BARBARA	6/11	12:35 AM	1		standing
ATK	SAN DIEGO	6/19	2:04 PM		1	walking
BNSF	SAN JOAQUIN	6/25	3:30 AM	1		sitting
UP	SUTTER	6/26	10:00 AM	1		walking
UP	RIVERSIDE	6/29	1:35 AM		1	laying
BNSF	RIVERSIDE	6/30	10:15 PM	1		sitting
UP	LOS ANGELES	6/30	8:20 PM	1		walking
UP	SHASTA	7/3	12:35 AM		1	climbing over/on
UP	MADERA	7/4	8:12 AM	1		driving (motor vehicle, forklift, etc.)
UP	SOLANO	7/6	12:40 PM		1	laying
UP	FRESNO	7/6	7:55 AM	1		laying
PCMZ	SAN MATEO	7/8	2:01 PM		1	climbing over/onclimbing over/on
BNSF	MADERA	7/9	9:45 PM	1		sitting
ATK	VENTURA	7/11	7:40 AM	1		walking
UP	KERN	7/17	7:25 PM	1		laying
UP	SAN BERNARDINO	7/22	12:00 PM		1	getting on
UP	RIVERSIDE	7/29	6:30 PM	1		laying
BNSF	SAN BERNARDINO	7/31	2:30 PM	1		standing
UP	FRESNO	8/3	12:30 AM	1		laying
BNSF	LOS ANGELES	8/4	3:45 PM		1	driving (motor vehicle, forklift, etc.)
UP	LOS ANGELES	8/8	8:40 PM	1		climbing over/on
UP	IMPERIAL	8/8	9:00 AM	1		riding
UP	IMPERIAL	8/9	3:15 AM		1	riding
UP	RIVERSIDE	8/13	7:49 PM	1		laying
UP	LOS ANGELES	8/14	7:10 PM	1		laying
UP	IMPERIAL	8/24	11:45 AM		1	getting on
UP	CONTRA COSTA	8/26	7:30 AM		1	climbing over/on
UP	SHASTA	8/26	4:35 AM	1		laying



Appendix II-M

Trespasser-Train Accidents/Incidents - 1999 (Continued)

Railroad	County	Date	Time	Killed	Injured	Physical Act
UP	ALAMEDA	8/29	5:45 AM		1	climbing over/on
UP	ALAMEDA	8/31	4:45 AM	1		laying
UP	LOS ANGELES	9/4	8:55 AM	1		laying
UP	LOS ANGELES	9/7	4:55 AM	1		riding
UP	CONTRA COSTA	9/8	7:00 PM		1	pushing
ATK	ORANGE	9/12	9:15 AM		1	walking
UP	SANTA BARBARA	9/21	11:00 PM	1		laying
UP	LOS ANGELES	9/22	10:35 AM		1	walking
BNSF	SAN BERNARDINO	9/30	10:15 AM	1		laying
UP	SAN BERNARDINO	9/30	9:10 PM	1		sitting
UP	SAN BERNARDINO	9/30	9:10 PM	1		sitting
UP	CONTRA COSTA	10/1	11:57 PM		1	crossing over
UP	LOS ANGELES	10/1	5:09 AM	1		sitting
UP	CONTRA COSTA	10/2	9:58 PM		1	sitting
UP	SHASTA	10/5	10:25 PM	1		laying
UP	SAN JOAQUIN	10/7	12:40 PM	1		laying
UP	PLACER	10/9	9:00 PM		1	climbing over/on
UP	CONTRA COSTA	10/10	3:40 AM		1	walking
UP	PLACER	10/10	12:01 AM	1		jumping from
UP	CONTRA COSTA	10/13	7:45 PM		1	crossing or crawling under
UP	SAN BERNARDINO	10/16	10:51 PM		1	crossing over
UP	SACRAMENTO	10/18	7:40 AM	1		climbing over/on
BNSF	SAN DIEGO	10/25	9:30 PM		1	laying
UP	MADERA	10/25	3:50 PM	1		walking
UP	CONTRA COSTA	10/30	10:42 PM	1		walking
UP	SANTA CLARA	10/30	8:45 PM	1		walking
UP	SAN JOAQUIN	11/3	5:55 PM	1		laying
UP	SACRAMENTO	11/6	5:30 PM		1	walking
UP	SAN BERNARDINO	11/6	9:35 PM	1		laying
BNSF	SAN BERNARDINO	11/9	10:10 PM	1		walking
UP	YUBA	11/12	11:40 AM		1	sitting
UP	PLACER	11/13	10:20 AM	1		walking
UP	ALAMEDA	11/16	8:30 AM	1		standing
ATK	SAN DIEGO	11/19	1:40 PM		1	walking
UP	LOS ANGELES	11/21	5:30 AM		1	riding
UP	LOS ANGELES	11/21	5:30 AM		1	riding
ATK	ALAMEDA	11/23	3:27 PM	1		walking
ATK	CONTRA COSTA	12/5	2:10 PM	1		walking
UP	STANISLAUS	12/6	9:30 AM	1		walking

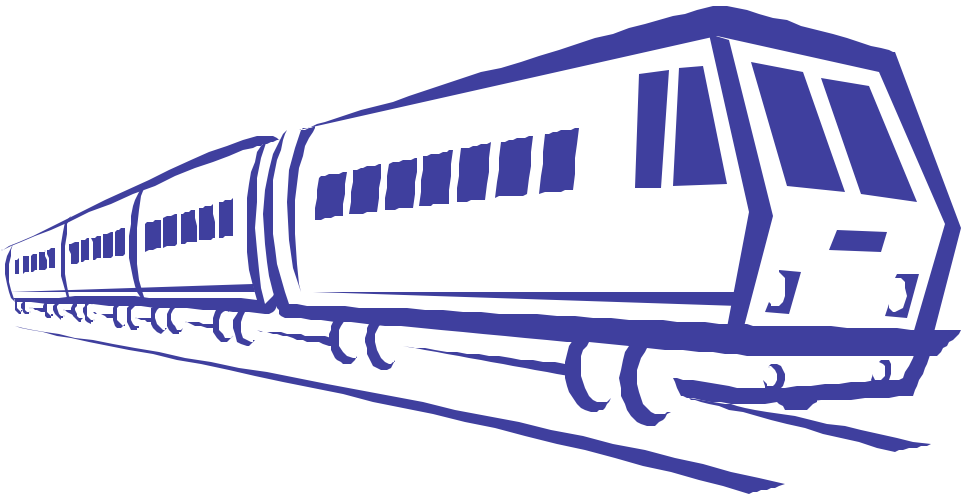


Appendix II-M

Trespasser-Train Accidents/Incidents - 1999 (Continued)

Railroad	County	Date	Time	Killed	Injured	Physical Act
UP	PLACER	12/8	12:30 PM		1	laying
UP	YUBA	12/8	2:34 PM		1	sitting
UP	RIVERSIDE	12/10	4:20 PM	1		sitting
UP	SACRAMENTO	12/12	3:13 AM	1		crossing over
BNSF	MERCED	12/13	5:05 AM	1		standing
UP	SACRAMENTO	12/17	12:15 AM		1	crossing over
UP	YUBA	12/17	10:48 PM	1		laying
UP	BUTTE	12/18	12:10 PM	1		walking
UP	SAN BERNARDINO	12/20	3:20 AM		1	getting off
UP	ALAMEDA	12/22	4:30 AM	1		sitting
UP	SACRAMENTO	12/23	3:30 PM	1		laying
UP	STANISLAUS	12/24	1:45 PM	1		sitting
UP	SAN BERNARDINO	12/29	1:45 PM	1		riding
ATK	STANISLAUS	12/31	9:05 PM	1		laying
BNSF	STANISLAUS	12/31	9:00 PM	1		walking

Appendix III
Rail Transit Data



Appendix III-A

LRV-Other Accidents and Casualties by Transit Agency - 1999

Light Rail Transit Agency	ACCIDENTS		CASUALTIES			
	Total	% of Total	Killed	Injured	Total	% of Total
LACMTA's Blue Line	2	6.1	0	2	2	6.7
MUNI	29	87.9	0	27	27	90.0
SDTI	0	0.0	0	0	0	0.0
SRTD	1	3.0	0	1	1	3.3
VTA	1	3.0	0	0	0	0.0
Total	**33**	**100.0**	**0**	**30**	**30**	**100.0**

"Other" includes accidents where passengers fell while boarding/alighting, when the LRV went into an emergency stop, or when there was a power outage requiring evacuation.

Appendix III-B

Light Rail, Rapid Rail, and Cable Car Accidents – 1999

Agency	Killed	Injured	Date	Time	Xing	Type	Location
LACMTA/BLUE			1/17	1905	YES	TRN-VEH	3RD/LONG BEACH BLVD
LACMTA/BLUE		1	1/22	1714	NO	PASS INJ	ANAHEIM STA
LACMTA/BLUE		1	1/23	1307	YES	TRN-PED	SAN PEDRO STA
LACMTA/BLUE		1	1/25	831	YES	TRN-VEH	WASHINGTON/NAIOMI
LACMTA/BLUE		1	1/26	1715	YES	TRN-VEH	WASHINGTON BLVD/GRIFITH ST
LACMTA/BLUE			2/3	1013	YES	TRN-VEH	HOOPER/WASHINGTON ST
LACMTA/BLUE		2	2/3	1120	YES	TRN-VEH	7TH/PACIFIC AV
LACMTA/BLUE			3/6	1824	YES	TRN-VEH	8TH/LOCUST
LACMTA/BLUE			3/12	1245	YES	TRN-VEH	20TH/LONG BEACH BLVD
LACMTA/BLUE			3/18	1430	YES	TRN-VEH	12TH/FLOWER ST
LACMTA/BLUE			3/21	955	YES	TRN-VEH	3RD/LONG BEACH BLVD
LACMTA/BLUE			3/22	1225	YES	TRN-VEH	WASHINGTON BLVD & HOOPER ST
LACMTA/BLUE			4/2	1715	YES	TRN-VEH	FLOWER ST/CAMERON LN
LACMTA/BLUE			5/3	1454	YES	TRN-VEH	WASHINGTON & HOOPER
LACMTA/BLUE		2	5/24	1200	YES	TRN-VEH	27TH/LONG BEACH BLVD.
LACMTA/BLUE			6/6	1015	YES	TRN-VEH	FLOWER & VENICE
LACMTA/BLUE		2	6/14	823A	YES	TRN-VEH	LONG BEACH BLVD/HILL ST
LACMTA/BLUE	1		6/24	1348	YES	TRN-PED	103RD ST STA -suicide
LACMTA/BLUE		1	6/28	605	YES	TRN-PED	FLORENCE AV STA
LACMTA/BLUE		6	6/28	1105	YES	TRN-VEH	7TH/LONG BEACH BLVD
LACMTA/BLUE		1	7/15	1145	YES	TRN-VEH	FLOWER/CAMERON LANE
LACMTA/BLUE	1		7/16	1427	YES	TRN-PED	55TH/LONG BEACH AVE
LACMTA/BLUE	1	1	7/24	710	YES	TRN-PED	ALONDRA BLVD GR. XING-suicide
LACMTA/BLUE			7/28	1738	YES	TRN-VEH	ALLEY ON FLOWER- 12TH & PICO
LACMTA/BLUE		1	8/5		YES	TRN-VEH	WASHINGTON/GRIFFITH
LACMTA/BLUE	1		8/13	1638	YES	TRN-VEH	WAHINGTON B;VD/TRINITY
LACMTA/BLUE			8/18	1035	YES	TRN-VEH	FLOWER/VENICE STS
LACMTA/BLUE			8/22	943	YES	TRN-VEH	FLOWER BET PICO/VENICE
LACMTA/BLUE		1	8/23	729	YES	TRN-PED	VERNON AV X-WALK
LACMTA/BLUE		1	8/30	1620	YES	TRN-PED	IMPERIAL HWAY GR. XING-suicide
LACMTA/BLUE		1	9/1	1439	YES	TRN-PED	IMPERIAL STA PED XING
LACMTA/BLUE		1	9/7	657	NO	PASS INJ	7TH/METRO CTR
LACMTA/BLUE		1	9/15		YES	TRN-VEH	FLOWER/PICO
LACMTA/BLUE			9/18	954	YES	TRN-VEH	WASHINGTON/MAIN STS
LACMTA/BLUE			9/29	1755	YES	TRN-VEH	6TH/LONG BEACH BLVD
LACMTA/BLUE		2	9/30	1338	YES	TRN-VEH	WASHINGTON/NAOMI STS
LACMTA/BLUE			10/16	1823	YES	TRN-VEH	20TH ST/LONG BEACH
LACMTA/BLUE		1	10/22	1013	YES	TRN-VEH	WASHINGTON BLVD/OLIVE ST
LACMTA/BLUE			10/23	1655	YES	TRN-VEH	3RD ST/LONG BEACH BLVD
LACMTA/BLUE			11/15	1747	YES	TRN-VEH	20TH/LONG BEACH BLVD
LACMTA/BLUE			11/18	1517	YES	TRN-VEH	7TH/PACIFIC AV
LACMTA/BLUE			11/18	1837	YES	TRN-VEH	WASHINGTON/CENTRAL

Appendix III-B

Light Rail, Rapid Rail, and Cable Car Accidents – 1999 (Continued)

Agency	Killed	Injured	Date	Time	Xing	Type	Location
LACMTA/BLUE	6		11/27	2300	YES	TRN-VEH	GREENLEAF AVE XING
LACMTA/BLUE		2	12/13	1735	YES	TRN-VEH	WASHINGTON BLVD/SN PEDRO ST
LACMTA/BLUE			12/16	810	NO	YARD-COLL	BLUE LINE YD
LACMTA/BLUE		1	12/21	1106	YES	TRN-VEH	WASHINGTON BLVD/OLIVE ST
LACMTA/BLUE		6	12/22	1115	YES	TRN-VEH	WILMINGTON/Willobrook
LACMTA/BLUE		1	12/26	825	YES	TRN-VEH	6TH/LONG BEACH BLVD
LACMTA/BLUE		1	12/26	1755	YES	TRN-VEH	7TH/LONG BEACH BLVD
LACMTA/BLUE		1	6/2	704	YES	TRN-VEH	Washington/Hill st
MUNI			1/4	1055P	YES	YARD-DERAIL	METRO YARD
MUNI		2	1/7	1157A	YES	TRN-VEH	OCEAN & JUNIPERO SERRA
MUNI			1/9	157P	NO	MAIN-COLL	SN JOSE & GENEVA AV
MUNI			1/10	550P	NO	MAIN-COLL	MARKET/5TH ST
MUNI		1	1/14	845A	YES	TRN-VEH	EMBARCADERO/HARRISON NB
MUNI		1	1/18	730A	YES	TRN-VEH	JUDAH/14TH AV
MUNI			1/18	710P	NO	YARD-DERAIL	GENEVA YARD
MUNI		1	1/21	1047A	NO	TRN-VEH	MARKET/DOLORES EB
MUNI		1	1/21	1020P	NO	PASS INJ	SN JOSE & GENEVA AV
MUNI			1/27	1015A	NO	MAIN-DERAIL	19TH AV/HOLLOWAY SB
MUNI			2/1	930P	NO	YARD-DERAIL	METRO YARD SO LADDER
MUNI			2/10	330P	NO	MAIN-COLL	CHURCH /DUBOCE
MUNI			2/11	945A	YES	TRN-VEH	MARKET/MCCOPPIN STS
MUNI		1	2/27	153P	NO	PASS INJ	EMBARCADERO STA
MUNI		1	3/2	514P	NO	MAIN-DERAIL	METRO TURNAROUND & SWITCH
MUNI		1	3/4	818A	YES	TRN-VEH	TARAVAL/SUNSET
MUNI		1	3/4	10P	NO	PASS INJ	VAN NESS STA
MUNI			3/8	505P	NO	TRN-VEH	EMBARCADERO/FOLSOM
MUNI		1	3/9	845A	YES	TRN-VEH	JUDAH/11TH AV
MUNI			3/12	6P	NO	TRN-VEH	WEST PORTAL/14TH
MUNI			3/19	353P	NO	MAIN-DERAIL	ULLOA/WEST PORTAL
MUNI			3/20	515P	NO	MAIN-COLL	SAN JOSE/GENEVA SB
MUNI			3/23	718A	NO	YARD-COLL	METRO YARD/TRACK 22N
MUNI			3/24	920A	NO	YARD-DERAIL	METRO YD, REVENUE LOOP
MUNI			3/25	925A	YES	TRN-VEH	CARL & WILLARD
MUNI			3/27	1035A	YES	TRN-VEH	"M" RT OF WAY/SLOAT
MUNI			3/28	1035A	NO	TRN-VEH	SAN JOSE & GENEVA
MUNI		1	4/2	1110A	NO	PASS INJ	JUDAH/48TH AV
MUNI		1	4/3	1148A	YES	TRN-VEH	OCEAN/MIRAMAR
MUNI			4/8	542A	NO	TRN-VEH	TARAVAL/42ND AV
MUNI			4/9	420P	NO	MAIN-COLL	SAN JOSE/PI SO GATE
MUNI		1	4/13	525P	YES	TRN-VEH	IRVING/5TH AV
MUNI		1	4/21	1021A	NO	PASS INJ	POWELL/CIVIC CTR
MUNI		1	4/21	420P	NO	TRN-VEH	BROAD/PLYMOUTH
MUNI			4/22	425A	NO	YARD-COLL	METRO YD, REVENUE LOOP

Appendix III-B

Light Rail, Rapid Rail, and Cable Car Accidents – 1999 (Continued)

Agency	Killed	Injured	Date	Time	Xing	Type	Location
MUNI		1	4/25	610P	YES	TRN-VEH	TARAVAL/20TH AV
MUNI		1	4/30	315P	YES	TRN-VEH	EMBARCADERO/BRANNAN
MUNI			5/6	710A	NO	YARD-DERAIL	METRO YD MEET/GREET
MUNI		1	5/7	542P	NO	PASS INJ	WEST PORTAL STA
MUNI		1	5/8	655P	NO	PASS INJ	TARAVAL/22ND AV
MUNI		1	5/10	522P	NO	PASS INJ	SUBWAY NR POWELL STA
MUNI			5/12	845P	YES	TRN-VEH	JUDAH/44TH AV
MUNI			5/12	730P	NO	MAIN-COLL	JUDAH/46TH AV
MUNI		2	5/14	842A	YES	TRN-VEH	IRVING ST/CARL ST
MUNI		1	5/14	1210P	YES	TRN-PED	KING ST/2ND ST
MUNI			5/15	152P	YES	TRN-VEH	19TH AV/WINSTON ST
MUNI		1	5/17	1005A	NO	PASS INJ	SUBWAY/EMBARCADERO
MUNI		1	5/17	1133A	NO	PASS INJ	SUBWAY/MONTGOMERY
MUNI			5/17	410P	NO	MAIN-DERAIL	KING ST/4TH ST
MUNI		1	5/18	1018A	NO	PASS INJ	CASTRO STA
MUNI		1	5/24	135P	NO	PASS INJ	SUBWAY/VAN NESS AVE
MUNI			5/27	715A	NO	OTHER	SAN JOSE/NIAGARA AV
MUNI		1	5/29	215P	NO	MAIN-COLL	WAWONA/46TH AV
MUNI			6/3	335P	YES	TRN-VEH	KING ST/TOWNSEND ST
MUNI			6/8	642P	YES	TRN-VEH	JUDAH ST/14TH AV
MUNI		2	6/17	2P	YES	TRN-VEH	RANDOLPH ST/RAMSELL ST
MUNI			6/21	830A	NO	OTHER	CHURCH ST/DUBOCE ST
MUNI		2	6/22	308P	NO	PASS INJ	CHURCH ST STA
MUNI		1	6/28	1255P	NO	PASS INJ	WEST PORTAL STA
MUNI		3	6/29	1130A	NO	MAIN-COLL	SUBWAY/MMT T/L
MUNI		1	7/1	1005A	NO	PASS INJ	MONTGOMERY ST STA
MUNI			7/15	148P	NO	MAIN-DERAIL	OCEAN AV/JUNIPERO SERRA BLVD
MUNI		1	7/16	510P	NO	PASS INJ	CASTRO STA
MUNI		1	7/17	220P	YES	TRN-PED	DUBOCE ST/STEINER ST
MUNI			7/19	730A	NO	MAIN-DERAIL	KING ST/4TH ST
MUNI		1	7/26	715A	NO	PASS INJ	MONTGOMERY ST STA
MUNI		1	7/27	445P	NO	PASS INJ	CASTRO STA
MUNI		1	8/3	125P	NO	PASS INJ	EMBARCADERO STA
MUNI		1	8/4	730A	NO	PASS INJ	WEST PORTAL STA
MUNI			8/4	933A	NO	MAIN-COLL	ULLOA/WEST PORTAL
MUNI		1	8/4	1220P	NO	PASS INJ	CIVIC CTR STA
MUNI		1	8/11	626P	NO	MAIN-DERAIL	KING ST/4TH ST
MUNI			8/11	730P	YES	TRN-VEH	3RD/KING ST
MUNI		1	8/14	1238P	YES	TRN-VEH	ULLOA/MADRONE ST
MUNI		1	8/25	947P	NO	TRN-PED	CHURCH ST/MARKET ST
MUNI			8/27	3P	NO	YARD-DERAIL	METRO YARD
MUNI		1	9/1	1021A	NO	TRN-PED	MARKET ST/13TH ST
MUNI		1	9/1	310P	NO	PASS INJ	EMBARCADERO STA

Appendix III-B

Light Rail, Rapid Rail, and Cable Car Accidents – 1999 (Continued)

Agency	Killed	Injured	Date	Time	Xing	Type	Location
MUNI			9/2	748A	NO	TRN-VEH	TARAVAL ST/18TH AV
MUNI		1	9/8	1223P	NO	PASS INJ	OCEAN AV/SAN LEANDRO WAY
MUNI			9/14	337P	NO	YARD-DERAIL	METRO YARD
MUNI			9/22	230P	NO	MAIN-DERAIL	DUBOCE/CHURCH STORAGE TRK
MUNI		1	9/22	505P	YES	TRN-VEH	EMBARCADERO/HARRISON ST
MUNI		1	9/23	815A	NO	PASS INJ	VAN NESS STA
MUNI			9/23	1220P	YES	TRN-VEH	SLOAT BLVD/JUNIPERO SERRA BLVD
MUNI		2	9/24	1030A	NO	YARD-COLL	GREEN METRO CTR
MUNI			9/26	838P	NO	MAIN-DERAIL	ULLOA ST/WEST PORTAL AV
MUNI			9/28	3P	NO	MAIN-DERAIL	OCEAN AV/K LINE PUL-IN GATE
MUNI			10/2	110P	YES	TRN-VEH	MARKET ST/12TH ST
MUNI		4	10/3	630P	YES	TRN-VEH	SAN JOSE AV/LAKEVIEW AV
MUNI			10/6	758A	NO	FIRE	CASTRO SUBWAY STA
MUNI		3	10/7	850A	YES	TRN-VEH	MARKET ST/SANCHEZ ST
MUNI		1	10/8	830A	YES	MAIN-DERAIL	SAN JOSE AV/GENEVA AV
MUNI			10/9	550P	YES	TRN-VEH	EMBARCADERO/BRANNAN ST
MUNI		4	10/12	807P	YES	TRN-VEH	TARAVAL ST/21ST AV
MUNI		2	10/31	920A	YES	TRN-VEH	19TH AVE/JUNIPERO SERRA
MUNI		1	11/1	440P	NO	PASS INJ	TARAVAL ST/19TH AV
MUNI	1	1	11/2	2345P	NO	TRN-PED	KING ST/2ND ST
MUNI		1	11/3	923A	NO	PASS INJ	WEST PORTAL STA
MUNI			11/4	10P	NO	YARD-DERAIL	METRO RAIL CTR TRK SWITCH
MUNI		2	11/18	7A	YES	TRN-VEH	MARKET ST/VAN NESS
MUNI			11/18	326P	YES	TRN-VEH	MARKET ST/LAGUNA ST
MUNI			11/26	120P	NO	YARD-DERAIL	METRO YARD NO LADDER TRK
MUNI			12/7	752 A	NO	POWER OUTAGE	DUBOCE PORTAL/VAN NESS STA
MUNI			12/16	1000P	YES	TRN-VEH	EMBARCADERO/HARRISON ST
MUNI			12/21	525A	NO	MAIN-DERAIL	METRO SUBWAY TRK @ SIG.D-G & SW.D-1
MUNI			12/30	644P	YES	TRN-VEH	FREMONT ST/TRANSBAY TERMINAL
SDTI		1	1/27	540P	NO	TRN-PED	PALM CITY STAT
SDTI		1	1/27	352P	YES	TRN-VEH	27TH ST
SDTI		1	1/5	352P	YES	TRN-VEH	27TH ST
SDTI			2/17	1135	YES	TRN-VEH	12TH/BROADWAY
SDTI	1	2	3/6	112P	YES	TRN-VEH	SMYTHE ST HWAY XING
SDTI			3/29	323A	NO	MAIN-DERAIL	SWITCH #1 MAINLINE
SDTI			5/9	444p	YES	TRN-VEH	4TH AVE
SDTI			5/26	826A	YES	TRN-VEH	SN YSIDRO ACCESS RD
SDTI	1		5/9	1036P	NO	TRN-PED	BET. WASHINGTON/SASSAFRASS XING
SDTI		1	6/9	805A	YES	TRN-VEH	12th/F St (Downtown SD)
SDTI			7/26	1033P	NO	TRN-VEH	C ST BETW. 6TH & 7TH
SDTI		1	8/10	237p	NO	TRN-PED	EL CAJON TRANSIT CTR-suicide attempt
SDTI			8/13	1129A	YES	TRN-VEH	2ND AV & C ST

Appendix III-B

Light Rail, Rapid Rail, and Cable Car Accidents – 1999 (Continued)

Agency	Killed	Injured	Date	Time	Xing	Type	Location
SDTI		1	8/20	922A	YES	TRN-PED	10TH AV & C ST
SDTI			8/30	205P	NO	MAIN-DERAIL	SWITCH #31
SDTI		1	9/13	537P	YES	TRN-PED	C ST/CIVIC CTR
SDTI			9/28	628P	YES	TRN-VEH	32ND ST (PACIFIC FLEET)
SDTI		1	10/30	428P	NO	TRN-PED	SPRING ST STA
SDTI		1	11/12	224P	NO	TRN-PED	IRIS AVE STA
SDTI	1		11/26	503P	NO	TRN-PED	SO. CENTRAL AVE-suicide
SDTI			12/4	647P	YES	TRN-VEH	COMMERCIAL/28TH ST
SDTI			12/10	620A	YES	TRN-VEH	NAPLES ST XING
SDTI		1	12/15	1148A	YES	TRN-VEH	COMMERCIAL/25TH ST
SDTI		2	12/15	608P	YES	TRN-VEH	COMMERCIAL/28TH ST
SDTI			12/25	917A	YES	TRN-VEH	COMMERCIAL/30TH ST
SRTD		30	2/8	1115a	NO	MAIN-COLL	BEE BRIDGE
SRTD	1		2/14	645P	NO	TRN-PED	BUTTERFIELD STATION-suicide
SRTD	2	2	3/20	450p	YES	TRN-VEH	BRADSHAW XING
SRTD		1	3/27	757P	NO	TRN-PED	ARDEN WAY/SWITCH 57 A/B
SRTD		1	4/29	1101A	NO	TRN-PED	NORTH 12TH ST
SRTD		1	9/10	635P	YES	OTHER	12TH/E STS
SRTD		1	10/5	1124A	YES	TRN-VEH	7TH & L STS
SRTD		1	10/5	450P	NO	TRN-PED	MARCONI STA
SRTD	1		10/23	252P	NO	TRN-PED	BUTTERFIELD STATION
SRTD		1	10/26	841A	YES	TRN-VEH	NORTH 12TH ST & SPROUTE
SRTD		1	11/22	7:58A	NO	TRN-PED	GLOBE STATION
SRTD		7	12/1	354P	YES	TRN-VEH	JACKSON RD XING
SRTD		2	12/7	229P	YES	TRN-VEH	8TH ST BETW "I" & "K" ST
SCVTA			3/10	1901	YES	TRN-VEH	2ND ST BET. JAMES/SANTA CLARA
SCVTA	1	2	3/17	900	YES	TRN-VEH	BLOSSOM HILL RD (NB)
SCVTA			3/26	1249	YES	TRN-VEH	NO.1ST ST & STA CLARA
SCVTA			6/10	1355	YES	TRN-VEH	SB 2ND ST & SN CARLOS
SCVTA			7/9	1715	NO	MAIN-DERAIL	SB 1ST ST AT SWITCH 27B
SCVTA			7/15	657	NO	MAIN-DERAIL	SB TASMAN TURN BACK
SCVTA		2	8/9	1605	YES	TRN-VEH	SB 1ST ST @ SNORA
SCVTA			8/6		NO	MAIN-COLL	EB NR CENTRAL EXPRESSWAY
SCVTA			9/4	829	NO	TRN-VEH	SB 2ND/SAN CARLOS
SCVTA			9/20	1502	YES	TRN-VEH	NB 1ST ST AT MISSION
SCVTA			9/25	1745	YES	TRN-VEH	SB 1ST ST @ GISH
SCVTA			10/14	2122	YES	TRN-VEH	NB 1ST/BAYSHORE
SCVTA			10/15	710	NO	OTHER	NB AYER STA/BIKE
SCVTA			10/19	112	YES	TRN-VEH	NB 1ST/BROKAW
SCVTA			10/19	1044	YES	TRN-VEH	SB 1ST/MOTAGUE
SCVTA			10/29	940	NO	TRN-VEH	NB CONVENTION CTR STA
SCVTA	1		11/11	1716	NO	TRN-PED	NB COMPONENT STA
SCVTA			11/16	905	YES	TRN-VEH	WB MIDDLEFIELD RD
SCVTA			12/1	1335	NO	YARD-COLL	TRACK 5, LM-094

Appendix III-B

Light Rail, Rapid Rail, and Cable Car Accidents – 1999 (Continued)

Agency	Killed	Injured	Date	Time	Xing	Type	Location
SCVTA			12/5	922	NO	MAIN-COLL	SB RIO ROBLES @ SWITCH 23b
SCVTA			12/20	1620	YES	TRN-VEH	SB KARINA
SCVTA			12/21	1220	NO	TRN-PED	NB STA CLARA STA
CABLE CAR			1/16	646A	NO	MAIN-DERAIL	HYDE/BAY OB/NB
CABLE CAR			1/16	923A	NO	MAIN-DERAIL	POWELL/JACKSON OB/NB
CABLE CAR			1/19	1030A	NO	MAIN-DERAIL	POWELL/JACKSON OB/NB
CABLE CAR			1/19	118P	NO	MAIN-DERAIL	POWELL/MARKET IB/SB
CABLE CAR		3	1/21	420P	NO	TRN-VEH	HYDEE/NO PT 0B/NB
CABLE CAR			1/23	307P	NO	MAIN-DERAIL	POWELL/PINE OB/NB
CABLE CAR		1	1/28	1120A	NO	PASS INJ	POWELL/PINE OB/NB
CABLE CAR		1	2/9	925A	NO	TRN-VEH	POWELL/BUSH NB/OB
CABLE CAR			3/2	837p	NO	MAIN-DERAIL	POWELL/JACKSON
CABLE CAR		1	3/8	810A	NO	TRN-VEH	JACKSON/POWELL (OB/WB)
CABLE CAR			3/26	549A	NO	MAIN-DERAIL	POWELL/JACKSON (OB/NB)
CABLE CAR			3/29	849P	NO	MAIN-DERAIL	POWELL/SCTO IB/SB
CABLE CAR		1	4/25	140P	NO	TRN-VEH	POWELL/CALIF
CABLE CAR			6/16	215p	NO	TRN-VEH	CALIFORNIA/POLK
CABLE CAR		1	6/17	559p	NO	PASS INJ	CALIFORNIA/DAVIS
CABLE CAR			6/22	145P	NO	TRN-VEH	POWELL/BUSH IB/SB
CABLE CAR		1	7/14	720P	NO	PASS INJ	HYDE/PACIFIC
CABLE CAR			8/11	735A	NO	TRN-VEH	CALIF/DRUMM
CABLE CAR		1	8/17	625P	NO	PASS INJ	CALIF/LEAVENWORTH
CABLE CAR			8/20	255P	NO	MAIN-COLL	HYDE/BEACH
CABLE CAR		7	8/26	1205P	NO	OTHER	WASHINGTON/MASON
CABLE CAR		1	9/11	930A	NO	PASS INJ	CALIF/HYDE
CABLE CAR		1	9/16	3P	NO	PASS INJ	POWELL/MARKET IB/SB
CABLE CAR		1	10/13	6P	YES	TRN-VEH	WASHINGTON/TAYLOR
CABLE CAR		1	10/18	936A	YES	TRN-PED	POWELL/ELLIS
CABLE CAR		4	10/18	1210P	NO	OTHER	TAYLOR/BAY
CABLE CAR		2	11/12	1020A	NO	TRN-VEH	CALIF/LEAVENWORTH
CABLE CAR		1	11/23	325P	NO	PASS INJ	CALIF/MASON
CABLE CAR		1	12/20	1145A	NO	OTHER	TAYLOR/BAY
BART			3/26			MAIN-COLL	
BART		5	3/18	1316	NO	FIRE	PITTSBURG/BAYPT. STA
BART		1	4/28	1225	NO	TRN-PED	A20 (FRUITVALE STA)
BART			4/28	2005	NO	YARD-DERAIL	RICHMOND YARD
BART			4/14	1310	NO	YARD-DERAIL	DALY CITY YARD
BART			5/1		NO	MAIN-DERAIL	M87 SPUR
BART			5/9	1040	NO	YARD-DERAIL	OHY
BART			8/17	1650	NO	YARD-DERAIL	OHY
BART			9/3	732	NO	YARD-COLL	ORY
BART			9/21		NO	YARD-COLL	OCY
BART	1		9/20	1630	NO	TRN-PED	A60-2-suicide

Appendix III-B

Light Rail, Rapid Rail, and Cable Car Accidents – 1999 (Continued)

Agency	Killed	Injured	Date	Time	Xing	Type	Location
BART		1	10/27	1953	NO	TRN-PED	EMBARCADERO STA-suicide attempt
BART			10/30	2124	NO	YARD-DERAIL	OHY-HAYWARD YARD
BART	1		11/29	835	NO	TRN-PED	12TH STA PLATFORM-suicide
BART			12/8	849	NO	MAIN-COLL	MP TRACK
LACMTA/GREEN		1	2/5		NO	TRN-PED	WILMINGTON EAST TRACK/TECHNICIAN
LACMTA/RED		1	7/25	1120	NO	TRN-PED	7TH/METRO-suicide attempt
LACMTA/RED	1		5/14	1518	NO	TRN-PED	Pershing Square Station-Suicide
LACMTA/RED		1	10/16	1212	NO	YARD-DERAIL	RED LINE YARD

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A

Accident/incident:
For Railroad:

(1) An impact between railroad on-track equipment and an automobile, bus, truck, motorcycle, bicycle, farm vehicle, or pedestrian at a highway-rail grade crossing;
(2) Any collision, derailment, fire, explosion, act of God, or other event involving operation of railroad on-track equipment (standing or moving) that results in more than the current reporting threshold (1999-$6,600) in damages to railroad on-track equipment, signals, track, track structures, and roadbed;
(3) Any event arising from the operation of a railroad which results in:
    (i) Death to any person;
    (ii) Injury to any person that requires medical treatment;
    (iii) Injury to a railroad employee that results in:
    (A) A day away from work;
    (B) Restricted work activity or job transfer; or
    (C) Loss of consciousness; or
(4) Occupational illness.

For Rail Transit

(a) Any event resulting in a fatality or serious injury requiring transportation to a medical facility by ambulance or police vehicle for medical treatment;
(b) Any fire or other hazardous event that requires the evacuation of passengers or requires fire suppression activities conducted by a fire department; and
(c) Any unacceptable hazardous condition which has been identified by the transit agency and which could cause death or injury to passengers or employees if not immediately corrected.
(d) Any derailment or collision between rail transit vehicles, or between rail transit vehicles and other on-track equipment;
(e) Any accident involving impact between rail transit vehicles and motor vehicles, pedestrians or other persons; and
(f) Any accident which causes property damage in excess of $100,000.

B

Blitz:
Named so as part of railroad's safety improvement efforts during a certain length of time in which to alert employees of specific hazards and to help avoid future accident occurrences by various corrective actions related to and promoting safe railroad operations.

C

Casualty:
An individual who suffers a fatal or non-fatal injury as described in **Injury**.

CERCLA:
Chemicals defined under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 are considered to be hazardous substances. The reportable quantity

is determined based on the intrinsic physical, chemical, and toxicological properties of the substance, including aquatic and mammalian toxicity, ignitability, and reactivity.

Collision:
A collision is an impact between trains, locomotives, cars or on-track work equipment traveling in the opposite, the same, or converging directions. This includes head-on, rear end, side, raking, or broken train impacts.

D

Death, injury or occupational illness accident/incident:
Any event arising from the operation of a railroad which results in:

(i) death of one or more persons.
(ii) injury to one or more persons, other than railroad employees, that requires medical treatment.
(iii) injury to one or more employees which requires medical treatment or results in restriction of work or motion for one or more days, one or more lost workdays, transfer to another job, termination of employment, or loss of consciousness.
(iv) any occupational illness of a railroad employee as diagnosed by a physician.

Derailment:
A derailment occurs when a train, locomotive or car leaves the rails for a reason other than a collision, explosion, or fire to equipment superstructure or cargo.

For Rail Transit
Any event resulting in a fatality or serious injury requiring transportation to a medical facility by ambulance or police vehicle for medical treatment

E

Employee not on duty:
Those employees who are on railroad property for purposes connected with their employment or with other railroad permission, but are not "on duty" as described below.

Employees on duty:
Persons engaged in the operation of a railroad. Ordinarily, the fact that the employee is or is not on pay status will determine whether he is or is not "on duty". There may, however, be exceptions such as employees on rest or meal periods, "training time", or doing work which they are expected to do but actually perform before pay starts or after pay stops. Such persons must be considered as employees on duty, if they are injured while on railroad property. An employee in deadhead transportation to or from a duty assignment must also be considered as an "employee on duty", regardless of the mode of transportation.

F

Fatality:
- Under FRA guidelines: A person who dies as a result of an injury incurred during railroad operations or resulting from an occupational illness, if death occurs within 365 days of initial diagnosis.

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- For transit systems: A person who dies at the scene of an accident as a result of an injury, if death occurs within 30 days of injuries caused by the accident.

Fire or violent rupture accident:
This is an accident of the type caused by the combustion of material or violent release of material being carried or transported on a train, locomotive or car.

G

Grade crossing accident (highway-rail grade crossing):
An impact at a grade crossing such as that referred for **Accident/incident**. A railroad-highway grade crossing is a location where one or more railroad tracks cross at grade a public highway, road, or street or a private roadway, including sidewalks and pathways at or associated with the crossing.

H

Highway-rail crossing:
A location where one or more railroad tracks cross a public highway, road, street, or a private roadway, including sidewalks, pathways, shoulders, etc., at or associated with the crossing site.

Hot zone:
A designated dangerous track zone within fifty feet of any rail car where railroad employees must take extra precaution to avoid being struck by rail equipment.

I

Injury:
Physical harm to a person resulting from a single event, activity, occurrence, etc., Any injury that requires medical treatment is reportable on that basis alone. However, medical treatment of a first aid nature is not reportable.

N

Non-train Incident:
An event that results in a reportable casualty, but does not involve the movement of on-track equipment or cause reportable damage above the threshold established for train incident.

Non-trespassers:
Persons who are lawfully on that part of railroad property which is used in railroad operation (other than those herein defined as employees, passengers, or trespassers), and person adjacent to railroad premises when injured as the result of the operations of a railroad.

O

Oil:
This category includes oils spills of petroleum products, animal and vegetable oils, and other non-petroleum oils that can be harmful to the environment affecting U.S. waters in accordance with the regulations issued under the Clean Water Act. They include crude oil, corn oil, coal tar, oil slick, and others. The

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regulations require a notification if the discharge:

- Causes a sheen to appear on the surface of the water or adjoining shoreline;
- Violated applicable water quality standards; or
- Caused a sludge or emulsion to be deposited beneath the surface of the water or upon the adjoining shoreline.

P

Passengers:
Persons who are on, boarding, or alighting from railroad cars for the purpose of travel.

Private Crossings:
Crossings not open to general public use. These crossings are usually covered under an agreement between the adjacent property owners and the railroad.

R

Rail equipment accident:
An event involving rail equipment and falling within the description of an accident meeting the requirements of a derailment, collision, or other rail equipment failure.

T

Train:
For purposes of accident reporting, a train is a locomotive or locomotive coupled with or without cars, and with or without markers displayed. This definition includes trains consisting entirely of self-propelled units designed to carry passenger, freight traffic, or both.

Train-accident:
Means any collision, derailment, fire, explosion, act of God, or other event involving operation of railroad on-track equipment (standing or moving) that results in damages greater than the current reporting threshold to railroad on-track equipment, signals, track, track structures, and roadbed.

Train-incident:
Means any event involving the movement of on-track equipment that results in a reportable casualty but does not cause reportable damage above the current threshold established for train accidents.

Train-mile:
The train movement for a one-mile distance. Mileage is not to be increased because of the presence of multiple locomotives in the train.

Train Passenger:
Persons who are on, boarding, or alighting from railroad cars or LRV for the purpose of travel.

Trespassers:
Persons who are on that part of railroad property used in railroad operation, and whose presence is prohibited, forbidden, or unlawful.

V

Vehicle Occupant(s):
Motor vehicle or automobile occupants, including driver and passengers.

References

REFERENCES

1) California Department of Finance, http://www.chp.ca.gov/pub/switrs/97/index.html#section1.
2) California Public Utilities Commission General Orders 22-B, 143-A, and 164-B.
3) Code of Federal Regulations Transportation 49, Parts 200 to 399, Revised as of October 1, 1999, National Archives and Records Administration.
4) FRA Guide for Preparing Accident/Incident Reports, U.S. Dept. of Transportation, 1997.
5) U.S. Environmental Protection Agency (1996). Emergency Response Notification System Database. http://www.epa.gov/ERNS/docs.