



***Federal Railroad Administration
Office of Railroad Safety
Accident and Analysis Branch***

***Accident Investigation Report
HQ-2016-1116***

***Altamont Commuter Express Authority (ACEX)
Sunol, CA
March 7, 2016***

Note that 49 U.S.C. §20903 provides that no part of an accident or incident report, including this one, made by the Secretary of Transportation/Federal Railroad Administration under 49 U.S.C. §20902 may be used in a civil action for damages resulting from a matter mentioned in the report.

SYNOPSIS

Synopsis

On March 7, 2016, at 7:20 p.m., PST, eastbound Altamont Commuter Express (ACE) Passenger Train No. 10 (ACE Train No. 10), operated by Herzog Transit Services, Inc. (HTSI), was traveling at 40 mph on single main track and operating cab car-forward with four additional passenger cars and a trailing locomotive, when the leading two cars derailed after hitting a mudslide and a downed tree fouling the tracks. The accident occurred at Milepost 34.1 on Union Pacific Railroad's (UP) Oakland Subdivision near Sunol, California, which is 22 miles north of San Jose, California, in Alameda County. The impact caused the leading cab car to derail onto its side and slide down a steep embankment partially into the rain-swollen Alameda Creek. The second car derailed but remained upright on the track. The accident injured 9 of the 214 passengers onboard. Movements in this part of the railroad are under a traffic control system by UP Dispatcher 58, located in Omaha, Nebraska.

The weather at the time of the accident was dark and raining with a temperature of 46° Fahrenheit. This area had received steady, soaking rains in the weeks prior to and including the day of the accident. UP had conducted routine and special track inspections prior to the accident given the weather conditions.

Damage to equipment was estimated at \$2,608,512 and \$41,959 to track, signal, and structures.

There were no hazardous materials involved and was not PTC-preventable.

The probable cause of the accident was M101-Snow, ice, mud, gravel, coal, sand, etc. on track (Environmental Condition).

TRAIN SUMMARY

1. Name of Railroad Operating Train #1 Altamont Commuter Express Authority	1a. Alphabetic Code ACEX	1b. Railroad Accident/Incident No. A03072016
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GENERAL INFORMATION

1. Name of Railroad or Other Entity Responsible for Track Maintenance Union Pacific Railroad Company		1a. Alphabetic Code UP	1b. Railroad Accident/Incident No. 0316RS011	
2. U.S. DOT Grade Crossing Identification Number		3. Date of Accident/Incident 3/7/2016	4. Time of Accident/Incident 7:20 PM	
5. Type of Accident/Incident Obstruction				
6. Cars Carrying HAZMAT 0	7. HAZMAT Cars Damaged/Derailed 0	8. Cars Releasing HAZMAT 0	9. People Evacuated 0	10. Subdivision Oakland
11. Nearest City/Town Sunol		12. Milepost (to nearest tenth) 34.00	13. State Abbr. CA	14. County ALAMEDA
15. Temperature (F) 46 °F	16. Visibility Dark	17. Weather Rain	18. Type of Track Main	
19. Track Name/Number Main		20. FRA Track Class Freight Trains-40, Passenger Trains-60		21. Annual Track Density (gross tons in millions) 2.6
				22. Time Table Direction East

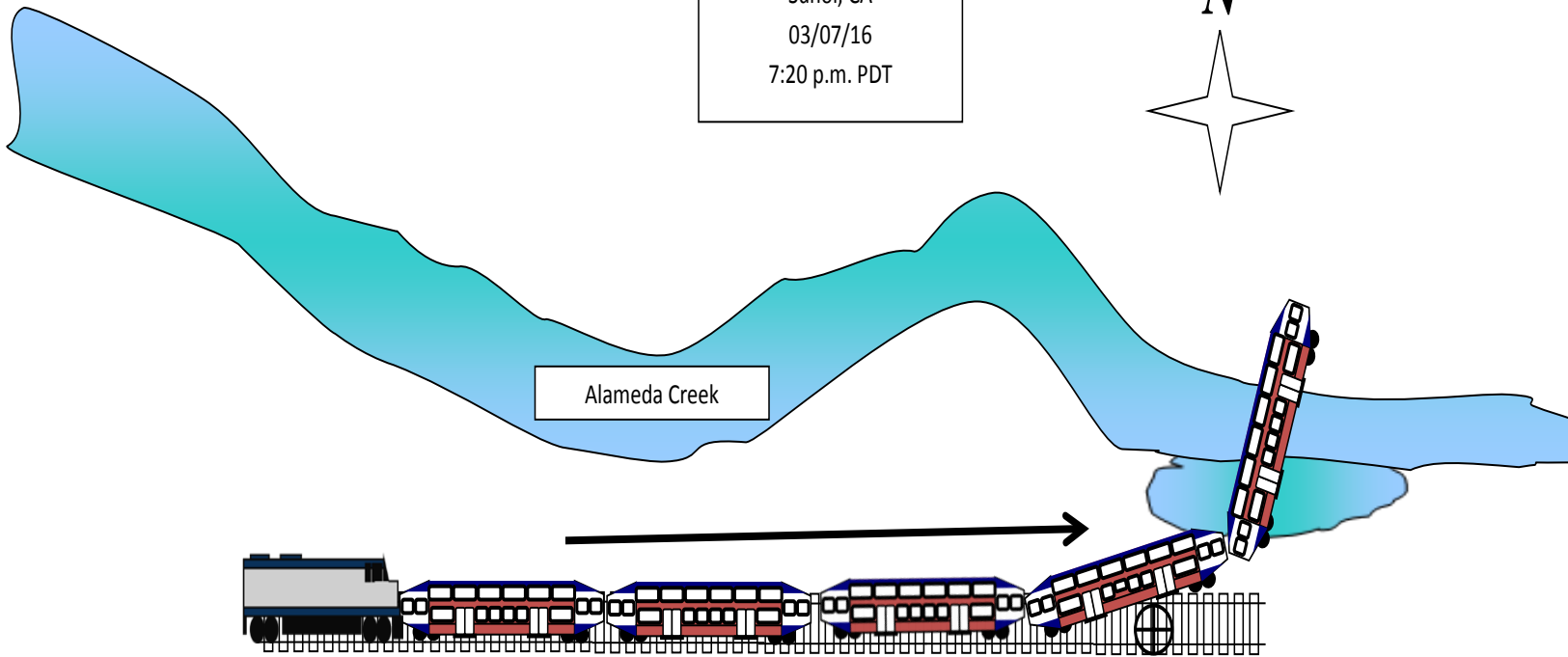
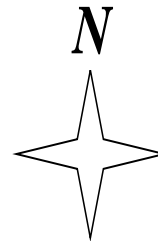
OPERATING TRAIN #1

1. Type of Equipment Consist: Commuter Train-Pushing					2. Was Equipment Attended? Yes			3. Train Number/Symbol ACE 10			
4. Speed (recorded speed, if available) R - Recorded 40 MPH E - Estimated		Code R	5. Trailing Tons (gross excluding power units)		6a. Remotely Controlled Locomotive? 0 = Not a remotely controlled operation 1 = Remote control portable transmitter 2 = Remote control tower operation 3 = Remote control portable transmitter - more than one remote control transmitter					Code 0	
6. Type of Territory Signalization: <u>Signaled</u> Method of Operation/Authority for Movement: <u>Signal Indication</u> Supplemental/Adjunct Codes: _____											
7. Principal Car/Unit		a. Initial and Number	b. Position in Train	c. Loaded (yes/no)	8. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box			Alcohol	Drugs		
(1) First Involved (derailed, struck, etc.)		ACE003309	1	yes				0	0		
(2) Causing (if mechanical, cause reported)		ACE003309	1	yes	9. Was this consist transporting passengers?			Yes			
10. Locomotive Units (Exclude EMU, DMU, and Cab Car Locomotives.)	a. Head End	Mid Train		Rear End		11. Cars (Include EMU, DMU, and Cab Car Locomotives.)	Loaded		Empty		e. Caboose
		b. Manual	c. Remote	d. Manual	e. Remote		a. Freight	b. Pass.	c. Freight	d. Pass.	
		(1) Total in Train	0	0	0		1	0	(1) Total in Equipment Consist	0	
(2) Total Derailed	0	0	0	0	0	(2) Total Derailed	0	2	0	0	0
12. Equipment Damage This Consist 2608512			13. Track, Signal, Way & Structure Damage 41959								
14. Primary Cause Code M101 - Snow, ice, mud, gravel, coal, sand, etc. on track											
15. Contributing Cause Code M101 - Snow, ice, mud, gravel, coal, sand, etc. on track											
Number of Crew Members						Length of Time on Duty					
16. Engineers/Operators		17. Firemen		18. Conductors		19. Brakemen		20. Engineer/Operator		21. Conductor	
1		0		1		0		Hrs: 5 Mins: 40		Hrs: 5 Mins: 45	
Casualties to:		22. Railroad Employees		23. Train Passengers		24. Others		25. EOT Device?		26. Was EOT Device Properly Armed?	
Fatal		0		0		0		N/A		N/A	
Nonfatal		0		9		0		27. Caboose Occupied by Crew?		N/A	
28. Latitude 37.596406000				29. Longitude -121.920091000							

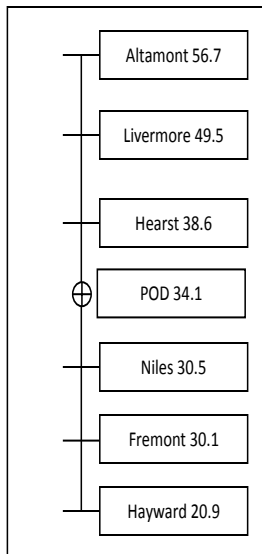
SKETCHES

ACE Sunol Sketch

HQ-2016-1116
Sunol, CA
03/07/16
7:20 p.m. PDT



W — Timetable Directions — E



ACE Train #10 Consist (Eastbound)

Car 5 (controlling cab car) 3309 – derailed on side into creek
Car 4 (cab car) 3304 (derailed upright)
Car 3 (coach) 3221
Car 2 (coach) 3206
Car 1 (coach) 3212
Locomotive (Trailing) 3104

NARRATIVE

For the purpose of this report, timetable and geographic directions are similar, and the time is reported in Pacific Standard Time. Additionally, the use of the abbreviation ACE is widely used by the Altamont Commuter Express for its train symbols and other related operating information and will be used throughout this report to refer to the train involved in the accident.

Circumstances Prior to the Accident

The Altamont Commuter Express (ACE) is a daily commuter railroad administered by the San Joaquin Regional Rail Commission and operated under contract with Herzog Transit Services, Inc. (HTSI). ACE operates on an 86-mile route with 10 stops, including Stockton and San Jose, California, with four westbound morning trains beginning between 4:20 a.m. and 7:05 a.m., and four returning eastbound evening trains commencing at 3:35 p.m. and 6:38 p.m. ACE's average annual ridership is approximately 1,300,000 people. Crews operating the morning trains layover at a facility in San Jose until their afternoon return trains.

The crew of eastbound ACE Train No. 10, consisting of a locomotive engineer and a conductor, reported for duty at 6:05 a.m., on March 7, 2016, in Stockton, their home-duty station. The crew operated ACE Train No. 7 to San Jose, with an arrival time of 9:35 a.m. The crew had a 10-minute trip to ACE's Layover Facility in San Jose. The crew had 7 hours, 35 minutes of interim rest prior to reporting for duty in San Jose at 5:30 p.m. to operate ACE Train No. 10 back to the Stockton area. Their assigned train consisted of a leading cab car with four additional passenger cars and a trailing locomotive.

After reporting for duty, the crew reviewed their track warrants and consist, updated notices, and held a job briefing to discuss information that may have affected the movement of their train. There was no discussion of worsening, adverse weather conditions or the potential for mudslides affecting their route reported by preceding eastbound crews.

The crew performed a set and release air brake test and departed San Jose under signal indication at approximately 6:38 p.m. ACE Train No. 10 traveled east on Union Pacific Railroad (UP) track heading geographically north and timetable east under UP Roseville Area Timetable No. 6, effective October 22, 2012.

The Accident

The last station stop prior to the derailment occurred at 7:08 p.m., in Fremont, and the train departed with 214 passengers on board. Around 7:18 p.m., the Conductor had just finished his walk-through of the train and went ahead to check on the Engineer. As the train rounded a curve and in dark, rainy conditions, the crew noticed a tree and mudslide across the tracks. They immediately placed the train

into emergency braking and braced for impact. Recorded speed was 40 mph. The time of impact was approximately 7:20 p.m.

The impact with the tree and mudslide materials caused the cab car to roll onto the engineer's side and slide into the adjacent, rain-swollen Alameda Creek, partially submerging the cab car. Train passengers started to call 911 for emergency assistance. The Engineer was able to get out of the controlling cab car and initiated passenger evacuation. The Conductor was tossed and swept out of the front cab car door into the runoff pool of the Alameda Creek, where he lost his company radio and cell phone. He was able to swim, grab onto a tree or tree limb, and climb on top of the car. The Conductor then borrowed a passenger's cell phone and contacted HTSI's Manager of Safety Operations to report the accident. The crew surveyed the scene and began assisting the injured and uninjured passengers.

At approximately 7:32 p.m., a HSTI Manager of Safety Operations contacted UP Dispatcher 58 regarding ACE Train No. 10's derailment. UP's dispatcher notified UP's Response Management Communications Center of the train's location and initiated UP's Passenger Train Emergency Preparedness Plan.

At 8:04 p.m., the Alameda County Sheriff and Fire Departments arrived on scene and an orderly evacuation of passengers commenced. The California Highway Patrol and Caltrans Highway Department also assisted. Of the 214 passengers onboard, 9 passengers sustained injuries, of which 4 were serious but not life-threatening. The injured passengers were transported to Washington Hospital in Fremont and Eden Hospital in Castro Valley.

The remaining passengers were staged at an on-scene Command Post where they awaited transportation to the Alameda County Fairgrounds. The emergency responders logged the passengers' identities and checked for additional injuries both when they departed the staging area and arrived at the fairgrounds. The American Red Cross and the Salvation Army at the fairgrounds provided food, drinks, and blankets for the passengers. All 214 passengers and 2 crew members were accounted for.

Post-Accident Investigation

Teams from HTSI, UP, the Federal Railroad Administration (FRA), the California Public Utilities Commission (CPUC), and Alameda County arrived at the scene throughout the evening. FRA and CPUC inspectors began the investigation by obtaining documents, crew member statements, and photographing the accident scene. FRA interviewed the train crew and substantiated their accounts of the accident by reviewing event recorder data and dispatcher logs. The investigators also reviewed track inspection records and equipment maintenance inspection records, as well as crew training, testing, and certification records. The review of the locomotive event recorder download indicates train handling was not a factor. Federal post-accident toxicological testing was not conducted as it did not meet FRA's criteria.

The investigation also revealed that UP's Track Inspector had previously conducted a special inspection in this area. This is standard procedure throughout UP's system when prolonged drought conditions are

followed by sustained periods of heavy rain in terrain susceptible to mudslides.

Analysis and Conclusions

Analysis – Motive Power & Equipment (MP&E): A review of test and inspection records of the equipment involved showed no mechanical defects or other conditions were present at the time of the accident.

Conclusion: Based on its investigation, FRA determined that equipment issues are excluded as having contributed to the accident.

Analysis – Operating Practices: A review of qualifications, training, periodic performance tests, fatigue, and the actions of the crewmen returned no defects or other items that could have led to the accident.

Conclusion: Based on its investigation, FRA determined that the qualifications and training of the operating crew and their actions were not contributing factors to the accident.

Analysis – Signal & Train Control: A review of test and inspection records for the signal and/or train control system along the alignment showed no defects that could have led to the accident.

Conclusion: Based on its investigation, FRA determined that no signal or train control issues contributed to the accident.

Analysis – Emergency Preparedness: A review of ACE and UP's emergency preparedness and response plans and their implementation during the accident showed a suitable level of planning and participation of all affected emergency response agencies in the immediate area. The relative remoteness of the accident site hampered the response to some degree due to the lack of roads along the route and the ability of first responders to get emergency equipment and personnel to the site. Considering the minor number of injuries and the extent of the injuries incurred by passengers, the response, relief and evacuation effort among all agencies was noteworthy.

Conclusion: Emergency preparedness planning and execution were adequate and effective in dealing with this unanticipated and potentially disastrous event.

Analysis – Survivability of Passenger-Carrying Equipment: A team from FRA's Passenger Rail Division conducted an extensive analysis of the passenger cars in ACE Train No. 10's train consist. Of the five cars and locomotive, only the Bombardier Cab Car No. 3309 sustained damage that compromised the passenger area. There was roof/ceiling damage to the upper B-end (trailing in direction of travel) passenger area near the stairs and intrusion of dirt and debris in the lower and mid-level area from compromised doors and windows. The control compartment windows were shattered but remained intact despite entering the storm-runoff creek. The cab car F-end (leading) end door was dislodged at the hinges, which resulted in the Conductor being ejected in the water. Passenger injuries ranged from abrasions to fractures. All injuries are consistent with that of the sudden deceleration and vehicle

overturn.

Conclusion: The investigation revealed no defects or deficiencies in the construction, structural integrity, or performance of doors, windows, and emergency exits.

Overall Conclusions

The investigation concluded ACE Train No. 10 hit a tree fouling the track due to a mudslide from the hill adjacent to the track resulting from sustained, heavy rains in the area. Approaching the area of the derailment in poor visibility conditions and without lighting along the right-of-way, ACE Train No. 10's crew was unable to avoid stopping prior to hitting the downed tree and mudslide. This area had received heavy rains in the weeks prior to and including the day of the accident.

Based on analyses of inspections and maintenance of mechanical, track, signal, and train control systems, train crew training and qualifications, emergency preparedness initiation and execution, and a detailed analysis of the survivability of the equipment, each was excluded as a contributing factor to the accident.

Probable Cause and Contributing Factors

FRA has concluded the probable cause of the accident was M101 - Snow, ice, mud, gravel, coal, sand, etc. on track (Environmental Conditions). Based on FRA's investigation, there were no other contributing factors to the derailment.