



National Transportation Safety Board
Office of Railroad, Pipeline and Hazardous Materials Investigations
Washington, D.C. 20594

May 1, 2001

**SURVIVAL FACTORS GROUP CHAIRMAN'S FACTUAL REPORT OF
INVESTIGATION**

A. Accident

Carrier: National Railroad Passenger Corporation (Amtrak)
400 North Capitol Street NW, Washington, DC

Train: Westbound Amtrak Train 5 (17) The California Zephyr

Location: Westbound BNSF Main Track at Milepost 419.92 on the
Creston Subdivision of the Nebraska Division in Nodaway,
Iowa

Date: March 17, 2001

Time: 2340 Central Standard Time¹

Number: DCA-01-MR-003

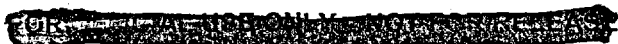
B. Group Members

James J. Gildea	NTSB	Group Chairman
Joseph Kris	NTSB	Member
Peter Hall	Amtrak	Member
Arthur Candenuist	Amtrak	Member
John Clayborne	Amtrak PD	Member
Jack N. Landon	BNSF	Member

C. Summary

About 2340, March 17, 2001 Amtrak Train #5, the California Zephyr consisting of two locomotive units and sixteen cars derailed at MP 419.92, near Nodaway, Iowa. The train was occupied by a 3-person operating crew, 13 on board service crew members and 241 passengers. The train had originated in Chicago, Ill. And was enroute to Oakland, CA.

¹ All times are local standard times and based on the 24-hour clock unless otherwise noted.



When the westbound train reached MP 419.92, the locomotive derailed and the consist began to separate. The locomotive and the first car remained parallel to the main track structure. The second, third, and fourth cars came to rest approximately 1000 feet east of the locomotive on the north side of the main track. The fifth and seventh cars were perpendicular to the main track structure. The sixth car came to rest on its side south of the main track while the eight and ninth cars came to rest on their sides on the north side of the track. The tenth through sixteenth cars remained upright and parallel to the main track.

As a result of the derailment, one passenger was fatally injured, 77 passengers and crewmembers were taken to four area hospitals where they were either admitted, treated in the emergency rooms and released, received routine medical examinations or transferred to other hospitals.

D. Details of the Investigation

1. Train Configuration

Amtrak Train 5

Amtrak train 5, consisted of locomotive units 140 and 141. One Caltran commuter car #4008, material handling car #1517, baggage car #1195, transition sleeper #39040, coach #34071, coach #34070, coach/baggage #31522, lounge #33034, dining car #38033, sleeping car #32049, sleeping car #32096, mail cars 70041, 71149, 70005, 71198, trailer 466855 made up the remainder of the consist. All cars that accommodated passengers and crew were Superliner cars.

2. Crew Information

Amtrak Train 5 Operating Crew

Amtrak train 5's operating crew consisted of an engineer, a conductor and an assistant conductor.

Immediately after the accident the engineer broadcast an emergency on the radio in locomotive unit 140. At the time of the accident the conductor was in locomotive unit ~~141~~¹⁴⁰. The conductor stated that he met emergency responders when they arrived and was impressed by their quick response. He stated that the safety light sticks contained aboard the train provided light for the passengers.

The assistant conductor was in the transition/dorm car at the time of the derailment.

Amtrak Train 5 On-Board Service Crew

The on-board service (OBS) crew consisted of one chief service crewmember and 12 on-board service crew members. After the accident, OBS crew members who were not injured and those that were released from the hospitals were taken to Omaha, NE.

On March 19, 2001 the Survival Factors Group requested that Amtrak obtain written statements from the OBS crew regarding their pre-accident observations and their post-accident actions. Eleven members of the OBS crew were in the transition/sleeper car at the time of the derailment. They stated that they felt the car derail and turn on its side. They helped each other to evacuate while several other crewmembers waited for emergency responders to assist them. One crew member stated that the emergency lights functioned in the transition/sleeper. Two OBS crew members were in each of the sleeper cars.

The lead service attendant stated, "The emergency crews were wonderful in helping us out and into the ambulances".

3. Passenger Information

According to Amtrak, 241 passengers were aboard Train 5. One hundred twenty-four passengers were sent N.T.S.B. questionnaires regarding their status and locations, observations before the derailment, the difficulties encountered in the evacuations, the circumstances that caused or contributed to their injuries and the actions of the emergency responders. Twenty-five questionnaires were completed and returned as of April 25, 2001; however not all respondents answered all of the questions.

Most of the passengers stated that they were asleep when the cars derailed, that they were awakened by the sound of the derailling cars or by the unusual motion of the cars.

Three passengers stated that they had physical disabilities that hampered their evacuations.

Eighteen passengers stated that they were not aware of any type of emergency announcement given by the crew at the

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beginning of their trip; however, four passengers stated that they had been given the announcement when they boarded. Not all of the passengers boarded at the same time and place.

Thirteen passengers stated that they had read the passenger safety instruction cards while 14 stated they did not read the cards. Of those that read the cards, two passengers stated that the instructions were inadequate. Two passengers who read the instructions stated that it helped them evacuate and find the emergency glow lights.

4. Damage to Train

On March 18, 19 and 20, 2001 the Survival Factors Group examined Amtrak Train 5 at the accident site in Nodaway, IA. No evidence of fire damage was present. Only those cars that were occupied at the time of the derailment were examined.

Locomotive units 140 and 141 remained upright. Unit 141 derailed and was not damaged except for its wheels. The first occupied car #39040, the transition/dorm derailed and came to rest approximately 50 feet north and approximately 40 feet lower than the main track bed. It listed 90 degrees² to north and remained parallel to the main track.

Coach #34071 derailed and came to rest perpendicular to the main track and listed approximately 15 degrees west. Coach #34070 derailed and came to rest approximately 45 feet south and approximately 40 feet lower than the main track bed. It listed 112 degrees south and remained parallel to the main track. Coach/smoking car #31522 derailed and came to rest perpendicular to the main track. It remained upright.

Lounge car #33034 derailed and came to rest at an oblique angle on the north side of the main track. It listed 25 degrees north. Diner#38033 derailed and came to rest coupled to the lounge and at a lesser oblique angle than the lounge. It listed 15 degrees north.

Sleeper cars #32049 and 32096 derailed and came to rest upright and parallel to the main track. For a damage description of

² Angles of degrees are described from the south and generally in the car's direction of travel except for car # 34070 described from the opposite direction of travel.

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each occupied car see attachment A, the Description of Interior Car Damage.

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5. Medical and Pathological

5.1 Injury Table

INJURY SCALE	AMTRAK OPER. CREW	AMTRAK OBS CREW	AMTRAK PASS	EMER. RESPOND	TOTAL
FATAL	0	0	1	0	1
SERIOUS	0	1	8	0	9
MINOR	0	6	45	2	53
NONE	3	6	187	-	196
TOTAL	3	13	241	2	259

5.2 Survivor Injuries

Of the 77 train occupants who were reportedly taken to area hospitals for treatment, 9 occupants were admitted; 51 occupants were treated and released from the hospital emergency rooms; 17 occupants were given routine medical examinations.

The occupants that were treated and released from hospitals sustained bruises, abrasions and small lacerations. The occupants that were admitted to hospitals sustained extremity fractures, rib fractures, back injuries, internal injuries and/or head injuries.

Two emergency responders received minor injuries while assisting in the rescue of the train's occupants.

5.3 Fatal Injuries

According to the Chief Medical Examiner of Iowa, Stella Riehl a 69-years-old female, passenger, received multiple blunt force fatal injuries as a result of the derailment.

She was located in coach 34070 by emergency medical technicians. Since the coach came to rest on its left side, the

decedent was located in an unconscious condition beneath luggage in the luggage rack approximately 25 feet from the east end of the coach. See figure 1 for a plan view of Superliner coach series 34000-34101.

6. Emergency Response

6.1 Adams County Emergency Response

About 2342 the Adams County 911 operator (Adams County Dispatch) received a call from the BNSF Fort Worth Dispatcher who stated that Amtrak derailed northeast of Nodaway and police, fire and ambulance were needed. At 2343, the Adams County Dispatcher dispatched a unit from the Adams County Sheriff's Department, Corning Volunteer Fire Department, and Nodaway Volunteer Fire Department. At 2345 the dispatcher called mutual aid fire and rescue departments from five surrounding counties.

At 2355, the first Adams County Reserve Police Officer arrived on site. He observed four passenger cars on their sides and requested that mutual aid continue their response to the accident site. He informed the dispatcher that lights, ladders, blankets and buses were needed.

At 0011, May 18, 2001 the Sheriff's unit on scene requested that the Nodaway Community Center be made available as a shelter for uninjured passengers. The center was opened and staffed by local residents and the Red Cross volunteers.

About 0015, the incident commander, the Adams County Emergency Management Coordinator established a command post on the south side of the main track opposite the transition/dorm car. The incident commander made contact with the Amtrak conductor who advised that 195 passengers and 15 crew member were aboard the train³.

At 0400 the command post was closed after emergency responders had assisted passengers to shelters or hospitals. The scene was turned over to representatives of BNSF Railroad and Amtrak.

³ One hundred ninety-five passengers were aboard train 5 prior to the Osceola, IA station stop. By the time of the Creston, IA station stop the total number of passengers were 241, the same number aboard the train at the time of the derailment.

6.2 Emergency Medical Response

At 2355 Adams County Rescue Ambulance was enroute and arrived on scene at 0007 on May 18, 2001. At 0015 triage was established near the command post on the west side of the accident site and a second triage area was established on the east side. Twenty-one ambulances responded to the scene representing 17 ambulance services in all.

By 0300 the occupants of train 5 had been evaluated and the need for ambulances had concluded. After all patients were transported to hospitals, the ambulance crews assisted medical personnel at the area hospitals that were involved in the treatment of the train's occupants.

6.3 Hospitals

Four hospitals were alerted that they might receive patients from the accident site. Alegent Health Mercy Hospital, Corning, IA initiated their disaster plan for the emergency. The following is a list of hospitals and the number of patients:⁴

Hospital	Patients	Admitted	Treated & Released	Examined
Alegent Health Mercy	36	1	31	4
Montgomery County	9	1	6	2
Clarinda Regional Health	24	2	11	11
Iowa Methodist Med. Ctr.	2	2	0	0
Iowa Greater Community	5	0	5	0
St. Joseph Hospital	2	2	0	0
Univ. of Neb. Med. Ctr.	1	1	0	0
Total	79	9	53	17

Six patients at Alegent Health Mercy were OBS crew members who were treated and released. Two patients at Iowa Greater Community Hospital were emergency responders who were treated and released. One patient at St. Joseph Hospital was an OBS crew member who was admitted.

6.4 Mutual Aid

⁴ The number of patients indicated in this report and their status are based on medical records received, and/or telephone contact with hospital patient information operators. Several persons listed as injured patients were given routine physical examinations and were diagnosed with other types of diseases or were found not to be injured as a result of the derailment. Several persons listed as transported to hospitals for treatment had accompanied relatives or friends that were injured.

The following counties and agencies responded with mutual aid: Adams County, Taylor County, Page County, Union County, Montgomery County, Fremont County, Iowa State Police, Life Net Helicopter, Life Flight Helicopter, and the Red Cross. The incident commander estimated that 250 emergency responders were either involved in rescue efforts or standing by to give assistance were needed.

7. Disaster Preparedness

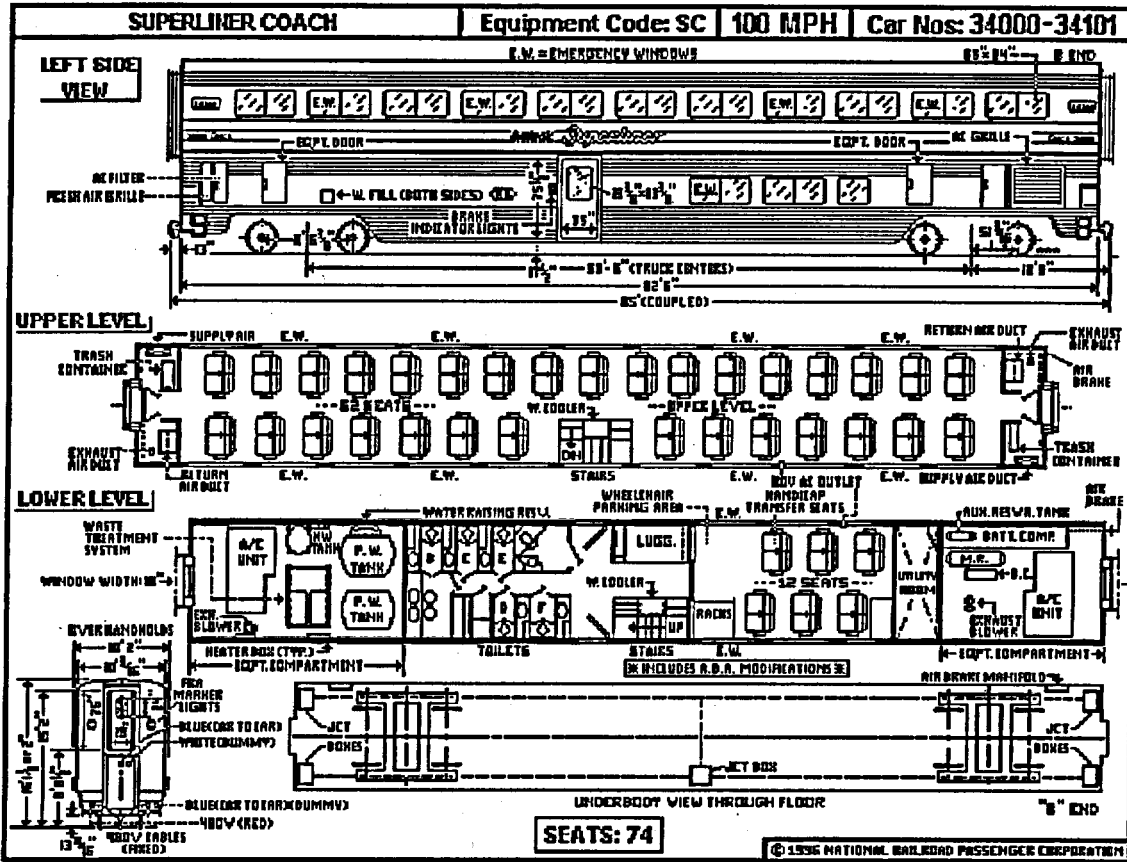
The Adams County disaster plan was not activated for this emergency. The derailment was a major medical emergency for emergency medical personnel. According to the Emergency Medical Director of Adams County Rescue, the amount of medical personnel and equipment that responded to the derailment was sufficient.

In April 2000, Adams County performed a disaster drill, a multiple automobile accident in which there were eight simulated fatalities. Adams County had not performed any disaster drills involving Amtrak or the BNSF Railroad.

On May 1, 2001, Amtrak conducted an emergency response debriefing of the emergency response agencies involved in this derailment. Amtrak has offered to conduct training with Adams County and other emergency response agencies involved in the derailment. The Adams County emergency management coordinator has accepted the offer. The training includes how emergency responders should interact with Amtrak crew members, familiarization with Amtrak equipment and evacuation of Amtrak trains.

James J. Gildea
Survival Factors Group Chairman

Figure 1



View of Coach Series 34000 to 34101