



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: May 29, 2009

In reply refer to: H-09-6

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The National Transportation Safety Board (NTSB) is an independent Federal agency charged by Congress with investigating transportation accidents, determining their probable cause, and making recommendations to prevent similar accidents from occurring. We are providing the following information to urge your organization to take action on the safety recommendation in this letter. The NTSB is vitally interested in this recommendation because it is designed to prevent accidents and save lives.

This recommendation addresses emergency medical response to large-scale rural transportation accidents. The recommendation is derived from the NTSB's investigation of the January 6, 2008, motorcoach rollover near Mexican Hat, Utah,¹ and is consistent with the evidence we found and the analysis we performed. As a result of this investigation, the NTSB has issued seven safety recommendations, one of which is addressed to the Utah Bureau of Emergency Medical Services. Information supporting the recommendation is discussed below. The NTSB would appreciate a response from you within 90 days addressing the actions you have taken or intend to take to implement our recommendation.

On January 6, 2008, about 3:15 p.m. mountain standard time, a 2007 Motor Coach Industries 56-passenger motorcoach with a driver and 52 passengers on board departed Telluride, Colorado, en route to Phoenix, Arizona, as part of a 17-motorcoach charter. The motorcoach passengers were returning from a 3-day ski trip. The normal route from Telluride to Phoenix along Colorado State Route 145 was closed due to snow, and the lead driver planned an alternate route that included U.S. Route 163/191 through Utah.

About 8:02 p.m., the motorcoach was traveling southbound, descending a 5.6-percent grade leading to a curve to the left, 1,800 feet north of milepost 29 on U.S. Route 163. The

¹ For more information, see *Motorcoach Rollover Near Mexican Hat, Utah, January 6, 2008*, Highway Accident Report NTSB/HAR-09/01 (Washington, DC: NTSB, 2009), which is available on the NTSB's website at <http://www.nts.gov/publictn/2009/HAR0901.pdf>.

weather was cloudy, and the roadway was dry at the time of the accident. After entering the curve, the motorcoach departed the right side of the roadway at a shallow angle, striking the guardrail with the right-rear wheel and lower coach body about 61 feet before the end of the guardrail. The motorcoach traveled approximately 350 feet along the foreslope (portion of roadside sloping away from the roadway), with the right tires off the roadway. The back tires lost traction as the foreslope transitioned into the drainage ditch.

The motorcoach rotated in a counterclockwise direction as it descended an embankment. The motorcoach overturned, struck several rocks in a drainage ditch bed at the bottom of the embankment, and came to rest on its wheels. During the 360-degree rollover sequence, the roof of the motorcoach separated from the body, and 50 of the 53 occupants were ejected. As a result of this accident, 9 passengers were fatally injured, and 43 passengers and the driver received injuries ranging from minor to serious.

The National Transportation Safety Board determined that the probable cause of this accident was the driver's diminished alertness due to inadequate sleep resulting from a combination of head congestion, problems acclimating to high altitude, and his sporadic use of his continuous positive airway pressure sleeping device during the accident trip. The driver's state of fatigue affected his awareness of his vehicle's excessive speed and lane position on a downhill mountain grade of a rural secondary road. Contributing to the accident's severity was the lack of an adequate motorcoach occupant protection system, primarily due to the National Highway Traffic Safety Administration's delay in developing and promulgating standards to enhance the protection of motorcoach passengers.

A tour or charter bus accident, as occurred in Mexican Hat, presents challenges to any rural emergency medical service (EMS) operation. Due to travel distances, the first emergency response unit arrived on scene almost an hour after the accident occurred, and the injured were transported from the scene for more than 4 hours following the accident. The limited local EMS resources and critical care facilities available in the Mexican Hat accident area dictated that assistance be drawn from around the region,² ultimately involving 13 medical facilities in four states (Utah, Arizona, New Mexico, and Colorado). To transport the injured to these facilities, 20 ambulances and 3 general purpose transport vehicles were used. A local mass casualty response trailer,³ one of nine positioned around the State, was driven to the accident site by the EMS Coordinator. The morning after the accident, an EMS support team from Price, Utah, arrived to support EMS operations and relieve the local first responders who had worked through the night; that team traveled more than 4 hours to arrive at Monticello, Utah.

Only basic life support (BLS) response capability was available locally; none of the ambulances that arrived on scene were staffed with paramedics, causing advanced life support (ALS) capability to be delayed because of travel distances. Because the ALS-equipped ambulances that were on scene lacked paramedics, they could not provide more than BLS care. Seven ALS ambulances staffed with paramedics responded to transport patients between medical

² Utah has statutory requirements for intrastate and interstate mutual aid (Utah Code, Title 53, chapter 2, sections 201 and 501).

³ The trailer contains BLS supplies, such as backboards and medical supplies, for 100 people.

facilities, some in inclement weather, with two ambulances traveling 230 miles from Grand Junction, Colorado; three traveling 117 miles from Moab, Utah; and two traveling more than 60 miles from Cortez, Colorado. Triage operations were conducted at the closest hospital to the accident site, San Juan Hospital, in Monticello, Utah, 75 miles away,⁴ and at a family clinic in Blanding, Utah, 40 miles away.⁵ The nearest trauma center, St. Mary's Hospital, was approximately 230 miles from the accident site, in Grand Junction. Several seriously injured passengers were driven from the accident scene a distance of 117 miles to Allen Memorial Hospital in Moab and then transferred to an EMS airplane and flown to a trauma center in Salt Lake City, Utah.

Two 16-year-old victims died after being transported from the accident scene. They received stabilization medical care at San Juan Hospital and from there were en route to hospitals with trauma treatment capabilities. One victim, en route to the Moab Airport to be airlifted to Salt Lake City, was diverted to Allen Memorial Hospital in Moab due to that victim's deteriorating medical condition. That victim died at 3:36 a.m., 7 hours after the accident. Another victim died just after reaching St. Mary's Hospital at 9:05 a.m. the next morning, 12.5 hours after the accident. Both had serious injuries, including head trauma.

The NTSB acknowledges the efforts of the on-scene emergency response and the challenges that had to be overcome by the EMS responders. Many aspects of the Mexican Hat EMS response are to be commended. Although its timeliness was affected by travel distances, mutual aid response by surrounding jurisdictions appeared to be well coordinated. A mass casualty incident trailer was locally available and used by the EMS Coordinator on scene. Many volunteers supported the EMS first responders.⁶ An EMS regional support team arrived from Price, Utah, the morning after the accident to relieve first responders who had worked through the night. Postaccident review meetings were conducted at the local hospital.

One EMS solution to long travel distances in rural areas is air medical response, because it can reduce transport time to emergency care and can provide a higher skill mix of medical flight crews. The growth of air medical response parallels hospital regionalization;⁷ further, the air medical industry is increasingly using EMS helicopters to bring more of the assets of a trauma center—including physician-level skills, hospital-type equipment, and advanced drugs—directly to the accident scene. Unfortunately, this accident highlights the obvious limitation of an emergency response system that relies on air transport. Weather grounded the two helicopters requested from Grand Junction and Phoenix, Arizona, thereby precluding rapid air EMS transport for the most severely injured.⁸ Transfers to a fixed-wing air ambulance were made in

⁴ Twenty-six accident victims were transferred to San Juan Hospital by ground ambulances, rescue units, and county vans. Most were in serious condition, requiring stabilization and transfer to higher levels of care.

⁵ Thirteen accident victims were transported to this clinic; several were then transferred to other facilities.

⁶ A passing motorist drove to the nearest town to report the accident. A second Arrow motorcoach driver stopped at the accident scene before first responders arrived. A passing truck provided temporary emergency lighting, and other motorists assisted the victims.

⁷ *Regionalization* refers to the organization of a health care delivery system within a region to avoid costly duplication of services.

⁸ By the afternoon after the accident, two helicopter crews were able to land in Blanding, Utah, to provide patient transport to higher-level care facilities.

Moab, Utah, because that airport had an instrument approach for instrument flight rules flight; these transfers required a 117-mile trip by ground ambulance from the accident scene. The NTSB concludes that the regionalization of medical care relies on air medical support to accomplish timely long-distance patient transport without adequate contingency plans when air medical services are not available because of weather or equipment limitations. Because it is not uncommon for an extremely sparsely populated area to be regularly traveled by tour and charter buses, the National Transportation Safety Board makes the following recommendation to the Utah Bureau of Emergency Medical Services:

Establish written contingency plans for response to large-scale transportation-related emergencies along rural roads traveled by tour and charter buses, such as occurred in Mexican Hat, Utah, that cannot be handled by air medical services due to inclement weather. (H-09-6)

The NTSB also issued recommendations to the Federal Interagency Committee on Emergency Medical Services, the Federal Highway Administration, the American Association of State Highway and Transportation Officials, the National Association of State Emergency Medical Services Officials, the American Bus Association, the United Motorcoach Association, and Arrow Stage Lines and reiterated one previously issued recommendation to the Federal Motor Carrier Safety Administration.

In response to the recommendation in this letter, please refer to Safety Recommendation H-09-6. If you would like to submit your response electronically rather than in hard copy, you may send it to the following e-mail address: correspondence@ntsb.gov. If your response includes attachments that exceed 5 megabytes, please e-mail us asking for instructions on how to use our Tumbleweed secure mailbox. To avoid confusion, please use only one method of submission (that is, do not submit both an electronic copy and a hard copy of the same response letter).

Acting Chairman ROSENKER and Members HERSMAN, HIGGINS, and SUMWALT concurred in this recommendation. Member HIGGINS filed a concurring statement, which is attached to the highway accident report.

[Original Signed]

By: Mark V. Rosenker
Acting Chairman