



**National Transportation Safety Board**  
Washington, D.C. 20594

**Safety Recommendation**

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**Date:** MAY 29 2009

**In reply refer to:** H-09-4 and -5

Mr. Drew Dawson  
Director  
Office of Emergency Medical Services  
National Highway Traffic Safety Administration  
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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 recommendations in this letter. The NTSB is vitally interested in these recommendations because they are designed to prevent accidents and save lives.

These recommendations address emergency notification and response to large-scale rural transportation accidents. The recommendations are derived from the NTSB's investigation of the January 6, 2008, motorcoach rollover near Mexican Hat, Utah,<sup>1</sup> and are consistent with the evidence we found and the analysis we performed. As a result of this investigation, the NTSB has issued seven safety recommendations, two of which are addressed to the Federal Interagency Committee on Emergency Medical Services (FICEMS). Information supporting the recommendations 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 recommendations.

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.

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<sup>1</sup> 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>>.

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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 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.

### **Emergency Notification**

Due to the lack of wireless telephone coverage at the accident scene, it took 36 minutes to report the Mexican Hat accident. Parts of San Juan County, like many rural areas, do not have wireless telephone coverage, and, in those areas, it is still not possible to make 911 calls from wireless devices.

Since the accident, three cellular antenna/repeaters have been installed near the accident site, providing that area with basic 911 notification capability. However, a national plan is needed to extend basic wireless service in rural areas. Although the NTSB encourages FICEMS to continue its work with Enhanced 911 (E-911)<sup>2</sup> and other programs to improve emergency medical service (EMS) notification, this accident points to systemwide gaps in coverage that are not addressed by the E-911 initiative. A pervasive wireless capability throughout our nation's highway system will undoubtedly improve highway accident notification for EMS response and coordination of prehospital transport and offer substantial collateral benefit to rural citizens. Local public officials will be able to better monitor and respond in cases of fire, medical

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<sup>2</sup> Ensuring Needed Help Arrives Near Callers Employing 911 (ENHANCE 911) Act of 2004 (Public Law 108-494, codified as 47 *United States Code* 942). The Act authorizes grants for the implementation and operation of Phase II E-911 services that provide caller identification and location information to public safety answering points (PSAPs).

emergencies, hazardous material spills, and law enforcement activities. Further, cellular towers are often used to house autonomous weather stations that could assist with the dispatch of air medical assets and improve local sensor information on severe weather events. The NTSB concludes that until wireless service capability is extended along highly traveled rural roads, motor carriers servicing rural areas without wireless telephone coverage remain at risk of being unable to report an accident or emergency in those locations. The NTSB recommends that FICEMS develop a plan that can be used by the States and PSAPs to pursue funding for enhancements of wireless communications coverage that can facilitate prompt accident notification and emergency response along high-risk rural roads, as identified under Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) criteria, and along rural roads having substantial large bus traffic (as defined by the criteria established in Safety Recommendation H-09-7<sup>3</sup>). These plans could include State Highway Safety Improvement Program projects to develop cellular communication for transportation accident notification.

### **Emergency Response**

A tour or charter bus accident, as occurred in Mexican Hat, presents challenges to any rural 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,<sup>4</sup> 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,<sup>5</sup> 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 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,<sup>6</sup> and at a family clinic in

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<sup>3</sup> Safety Recommendation H-09-7 to the Federal Highway Administration asks that criteria based on traffic patterns, passenger volume, and bus types be developed to assess the risks of rural travel by large buses.

<sup>4</sup> Utah has statutory requirements for intrastate and interstate mutual aid (Utah Code, Title 53, chapter 2, sections 201 and 501).

<sup>5</sup> The trailer contains BLS supplies, such as backboards and medical supplies, for 100 people.

<sup>6</sup> 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.

Blanding, Utah, 40 miles away.<sup>7</sup> 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.

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;<sup>8</sup> 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.<sup>9</sup> Transfers to a fixed-wing air ambulance were made in 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 NTSB is recommending that 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.

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

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<sup>7</sup> Thirteen accident victims were transported to this clinic; several were then transferred to other facilities.

<sup>8</sup> *Regionalization* refers to the organization of a health care delivery system within a region to avoid costly duplication of services.

<sup>9</sup> 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.

volunteers supported the EMS first responders.<sup>10</sup> 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.

Although the available regional resources were well utilized, emergency response would still have benefited from the availability of local paramedics with ALS ambulances and trauma centers closer to the accident site. The NTSB recognizes that although these are desirable assets for any community, funding issues must be considered, particularly for a large, rural jurisdiction such as San Juan County. In most States, as with Utah, the State handles EMS licensing, training, and regulatory policy, while EMS operations, including grant writing and funding, are performed locally.<sup>11</sup> The NTSB concludes that although the EMS mutual aid drawn from around the region was well coordinated, long-distance ground travel delayed the availability of advanced life support care. The NTSB recommends that FICEMS evaluate the system of emergency care response to large-scale transportation-related rural accidents and, once that evaluation is completed, develop guidelines for EMS response and provide those guidelines to the States. The NTSB realizes that the varied nature of State EMS organizations, as well as their characteristic differences, may dictate that several sets of recommended practices or guidelines be developed or that the information be developed in modules that can be customized by States.

As a result of its investigation, the National Transportation Safety Board makes the following recommendations to the Federal Interagency Committee on Emergency Medical Services:

Develop a plan that can be used by the States and public safety answering points to pursue funding for enhancements of wireless communications coverage that can facilitate prompt accident notification and emergency response along high-risk rural roads, as identified under SAFETEA-LU criteria, and along rural roads having substantial large bus traffic (as defined by the criteria established in Safety Recommendation H-09-7). (H-09-4)

Evaluate the system of emergency care response to large-scale transportation-related rural accidents and, once that evaluation is completed, develop guidelines for emergency medical service response and provide those guidelines to the States. (H-09-5)

The NTSB also issued recommendations to the Utah Bureau of 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.

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<sup>10</sup> 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.

<sup>11</sup> The National Academy of Sciences report, *Emergency Medical Services: At the Crossroads*, concluded that the States are often left to their own devices to develop EMS arrangements.

In response to the recommendations in this letter, please refer to Safety Recommendations H-09-4 and -5. 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](mailto: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 these recommendations. Member HIGGINS filed a concurring statement, which is attached to the highway accident report.

By:   
Mark V. Rosenker  
Acting Chairman