



NATIONAL TRANSPORTATION SAFETY BOARD
OFFICE OF HIGHWAY SAFETY
WASHINGTON, DC 20594

May 12, 2009

SURVIVAL FACTORS FACTUAL REPORT OF INVESTIGATION
(15 Pages)



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A. ACCIDENT

NTSB #: HWY-08-MH-022
Date and Time: August 8, 2008 at 12:45 a.m.
Description: Run Off Roadway Bridge and Rollover
Location: U.S. Highway 75 northbound at Milepost 208.0236 on the
Post Oak Creek Bridge
Vehicle: 2002, 56-Passenger MCI Motorcoach
Motor Carrier: Igualea BusMex

B. SURVIVAL FACTORS GROUP

Henry F. Hughes, Group Chairman 202 314-6405
National Transportation Safety Board

Officer Thomas Caver, Member 903 892-7290
Sherman Police Department

Chief J. J. Jones, Member 903 892-7263
Sherman Fire Department

Mr. Robert Barksdale, Member 214 366-5929
Motor Coach Industries (MCI)

C. ACCIDENT SUMMARY

About 12:45 a.m., central daylight time, on Friday, August 8, 2008, a 2002, 56-passenger Motor Coach Industries, Inc. (MCI), motorcoach, operated by Iguala BusMex, Inc., was northbound on U.S. Highway 75 when it was involved in a single-vehicle, multiple-fatality accident in Sherman, Texas. The chartered motorcoach had departed the Vietnamese Martyrs Catholic Church in Houston, Texas, at approximately 8:30 p.m. on August 7, 2008, with a driver and 55 passengers onboard, en route to the Marian Days Festival in Carthage, Missouri. When the accident occurred, the motorcoach had completed about 309 miles of the approximately 600-mile-long trip.

Before the crash, the motorcoach was traveling in the right lane of the four-lane divided highway. As the motorcoach approached the Post Oak Creek bridge at a speed of about 68 mph, its right steer axle tire failed. The motorcoach departed the roadway on an angle of about 4 degrees to the right, overrode a 7-inch-high, 18-inch-wide concrete curb, and struck the metal bridge railing. After riding against the bridge railing for about 120 feet and displacing approximately 136 feet of railing, the motorcoach went through the bridge railing and off the bridge. It fell about 8 feet and slid approximately 24 feet on its right side before coming to rest on the inclined earthen bridge abutment adjacent to Post Oak Creek. As a result of the accident, 17 motorcoach passengers died; 12 passengers were found to be dead at the crash site, and 5 others who were fatally injured later died at area hospitals. In addition, the 52-year-old driver received serious injuries, and 38 passengers received minor-to-serious injuries.

DETAILS OF THE SURVIVAL FACTORS INVESTIGATION

The Survival Factors Group (SFG) documented the following: exterior and interior damage to the motorcoach to include impact damage, deformation to the occupant compartment, safety appliances, the identification of injury causing mechanisms, passenger and witness interviews, and the emergency response by the public safety agencies and area medical facilities.

Post Accident Motorcoach Documentation

On August 9 and 10, 2008, Safety Board investigators examined the accident motorcoach to include a post accident mechanical and structural examination conducted by the Safety Board's Vehicle Factors Group (See "Vehicle Factors Factual Report" for additional information) in cooperation with the Sherman Police Department's Critical Accident Investigation Team (CAIT). In addition, the Survival Factors Group conducted an external and internal inspection of the motorcoach to document the crashworthiness aspect.

Exterior Damage

The 2002, 56 passenger, MCI J4500 motorcoach (VIN: 1M83JMRA62P061796) sustained significant exterior damage on the right front corner near the boarding door that extended approximately 102 inches across the width of the front and approximately 53 inches aft from the right front corner to about the midpoint of the right front wheel. The front windshield, and passenger boarding door on the right side of the motorcoach was destroyed. An examination of the motorcoaches roof showed damage along the front portion of the roof specifically the right front corner. The motorcoach was equipped with two emergency roof hatches (Part number MCI 712054) both of which were found to be intact and operational.

The motorcoach was also equipped with a Stewart and Stevenson Handicapped lift (610BL0901157) rated to lift 600 pounds. The lift was located along the right rear of the motorcoach. The handicapped lift or its use was examined did not sustain structural damage.

Interior Examination

The motorcoach was fitted with an adjustable single pedestal driver's seat manufactured by National Seat (61796-93B). The driver's seat was found to be functional however, the lap safety belt was not operational, and the right side hasp portion of the belt was jammed in its retaining reel and exhibited no signs of recent use. The 56 passenger seats were manufactured by National Seat (1679) and were not safety belt equipped, nor were they required to have been. The passenger seats were of the double seat variety and except for two seat units located in row 12 that were handicap retractable, the seat units were secured to the floor and or side wall of the motorcoach. All of the passenger seat units were found intact and secured with the exception of the right side aisle passenger seat in row 12 that was missing its seat pan and the double retractable passenger seat on the left side of row 12 that is believed to had been removed during the rescue operation.

The motorcoaches floor was examined and it was found that the ¾ inch plywood floor decking and support structure near row 1 was compromised on the right side and across the width of the motorcoach in row 12. There was no indication the motorcoach was equipped with floor path or emergency evacuation lights.

An examination of the sidewalls and emergency window exits revealed that the sidewalls on both the passenger and driver side exhibited signs of being deformed vertically. All seven (7) of the emergency window exits on the passenger side of the motorcoach were shattered and destroyed. The window frames remained intact and attached to the window frames however the safety glass was broken. The seven (7) emergency window exits on the driver side remained intact after the accident and were found to be functional but unutilized after the accident. During the rescue operation the first, second, and seventh windows (front to rear) on the driver side were damaged by rescue personnel. The ceiling was deformed vertically approximately 8-11 inches along the passenger side of the motorcoach. Both emergency roof hatches (MCI-712054) were intact and functional.

Both of the overhead luggage racks sustained damage at their anchorage points. The overhead luggage rack on the passenger side was found to be completely detached and came to rest along the tops of the passenger seats on the right side diagonally blocking the aisle near rows three (3) and four (4) as well as the right side emergency window exits. Examination of the passenger and driver side overhead luggage racks showed that they were attached to the side wall and ceiling via cast aluminum brackets.

The passenger side overhead luggage rack was about 36-feet-long and was equipped with 11 brackets each of which had two ½ inch bolts attaching the bin to the ceiling and 2 inline ½ inch bolts attaching the luggage rack to the sidewall.

The driver side overhead luggage rack was about 33-feet-long and was similarly configured except that it was attached by nine aluminum brackets all of which were found broken at their connection point to the ceiling and sidewall.

Examination of the underside of the passenger side overhead luggage racks showed several traces of blood, hair, and tissue in several places along the length of the single bin unit.

The issue of overhead luggage rack security is not unknown to the Safety Board as early as 1991, the NTSB assisted the Swedish Board of Accident Investigation (SHK) with the investigation of a plane crash near Arlandia, Sweden wherein all of the passenger overhead stowage bins became detached resulting in passenger injury and disrupting the post crash evacuation of the airplane.

As a result of the 1991, joint Swedish Board of Accident Investigation (SHK)/National Transportation Safety Board investigation Safety Recommendations A-92-11 through A-92-15 were issued to the Federal Aviation Administration. Require the modification of the design standards of passenger overhead luggage racks in commercial airplanes. The Safety Boards recommendations were acted upon by the FAA through the Boeing Company that provided a corrective retrofit modification.

The overhead luggage racks basic design on the accident airplane was a structurally similar design to the overhead luggage rack unit on the accident motorcoach. The attachment brackets were manufactured of cast aluminum and were bolted to horizontal rails. On both the airplane and motorcoach they were attached on the side wall and ceiling to an anchorage point that spanned the entire length of the interior. In this accident all nine (9) of the motorcoach's anchorage brackets attaching the overhead luggage racks on the passenger side of the motorcoach were detached during the accident sequence.

A representative of the National Highway Traffic Safety (NHTSA) was contacted regarding the Safety Board's preliminary findings and provided with factual information relevant to the overhead luggage racks. A representative from the NHTSA stated that NHTSA was planning to conduct additional testing during the summer of 2009 that would specifically address the security of the overhead luggage racks.

Interior Motorcoach Damage Documentation*

Driver's Seat Safety Belt Inoperative				Boarding Door- The boarding was severely damaged and was inoperative due to deformation along the front vertical frame.
Seat A	Seat B	Aisle	Seat C	Seat D
Seat 1A Emergency Window exit damaged	Seat 1B	Row 1	Seat 1C Floor deformed/ overhead luggage rack on the right side was found detached from its 11 anchorage points and lying across the passenger seat tops from row 3 to row 14.	Seat 1D Emergency Window exit for rows 1 and 2 destroyed
Seat 2A Emergency Window exit damaged	Seat 2B	Row 2 Emergency Roof Hatch MCI712054 (Functional)	Seat 2C	Seat 2D
Seat 3A	Seat 3B	Row3	Seat 3C	Seat 3D Emergency Window exit for rows 3 and 4 destroyed
Seat 4A	Seat 4B	Row4	Seat 4C-	Seat 4D-
Seat 5A	Seat 5B	Row5	Seat 5C	Seat 5D Emergency Window exit for rows 5 and 6 destroyed
Seat 6A	Seat 6B	Row6	Seat 6C	Seat 6D

Interior Motorcoach Damage Documentation continued

Seat A	Seat B	Aisle	Seat C	Seat D
Seat 7A Emergency Window exit damaged	Seat 7B	Row7	Seat 7C	Seat 7D Emergency Window exit for rows 7 and 8 destroyed -
Seat 8A	Seat 8B	Row6	Seat8C	Seat 8D
Seat 9A	Seat 9B-	Row9	Seat 9C-	Seat 9D Emergency Window exit for rows 9 and 10 destroyed.
Seat 10A	Seat 10B	Row10	Seat 10C-	Seat 10D
Seat 11A	Seat 11B	Row11 Emergency roof hatch MCI 712054 (Functional)	Seat 11C-	Seat 11D Emergency Window exit for rows 11 and 12 destroyed.
Seat 12A Floor deformed/Seat deformed	Seat 12B Floor deformed/Seat deformed	Row12 Floor deformed	Seat 12C Floor deformed and seat pan separated and missing	Seat 12D Handicapped Seat location/Floor deformed
Seat 13A	Seat 13B	Row13	Seat 13C-	Seat13D Non-Emergency window
Seat 14A	Seat 14B	Row14		ASM Wheelchair Lift Lavatory

*Unless specifically noted no deficiencies were observed.

The Safety Board has issued Safety Recommendations that in general terms address the security of the overhead luggage racks as well as emergency lighting, and floor level emergency exits in the 1999 Safety Study entitled: Highway Special Investigation Report Bus Crashworthiness Issues (NTSB/SIR99?04).

Safety Recommendations:

H-99-9 (NHTSA)

Issued February 26, 1999

Added to the Most Wanted List: 2000

Status: Open—Acceptable Response

Revise the Federal Motor Vehicle Safety Standard 217, “Bus Window Retention and Release,” to require that other than floor-level emergency exits can be easily opened and remain open during an emergency evacuation when a motorcoach is upright or at unusual attitudes. (Source: A 1999 special investigation on bus crashworthiness issues [NTSB/SIR-99/04])

H-99-47 (NHTSA)

Issued November 2, 1999

Added to the Most Wanted List: 2000

Status: Open—Acceptable Response

In 2 years, develop performance standards for motorcoach occupant protection systems that account for frontal impact collisions, side impact collisions, rear impact collisions, and rollovers. (Source: A 1999 special investigation on bus crashworthiness issues [NTSB/SIR-99/04])

H-99-50 (NHTSA)

Issued November 2, 1999

Added to the Most Wanted List: 2000

Status: Open—Acceptable Response

In 2 years, develop performance standards for motorcoach roof strength that provide maximum survival space for all seating positions and that take into account current typical motorcoach window dimensions. (Source: A 1999 special investigation on bus crashworthiness issues [NTSB/SIR-99/04])

Safety Appliances

A currently certified Badger Fire Protection ABC 8 pound fire extinguisher was found mounted in its floor bracket in the front of the motorcoach. No first aid kit was found during the August 9, 2008, examination.

Medical and Pathological Information

In this accident there were 11 area medical facilities that provided emergency medical treatment to the injured victims. Twelve victims were pronounced dead at the accident scene by two Grayson County Justices of the Peace and the other seven fatalities were pronounced dead at area medical facilities.

Injury Table*

Severity of Injury	Motorcoach Driver	Motorcoach Passengers	Total
Fatal	0	17	17
Serious	1	24	25
Minor	0	14	12
None	0	0	0
Total	1	55	56

* Title 49 *Code of Federal Regulations* 830.2 defines fatal injury as “any injury which results in death within 30 days of the accident” and serious injury as “an injury which: (1) requires hospitalization for more than 48 hours, commencing within 7 days from the date the injury was received; (2) results in a fracture of any bone (except simple fractures of fingers, toes, or nose); (3) causes severe hemorrhages, nerve, or tendon damage; (4) involves any internal organ; or (5) involves second- or third-degree burns, or any burn affecting more than 5 percent of the body surface.”

During the on-scene and follow-up investigation every effort was made to identify where the occupants were seated in the motorcoach. Based on passenger interviews, the statements of Sherman Police, Fire, and Emergency Medical personnel it was possible to establish where 48 of the 55 motorcoach occupants were believed to have been seated. Several interviews were conducted with members of the Sherman Fire and Police Departments regarding which passengers may have been ejected however, due to several factors (assistance rendered by other passengers, movement of injured passengers by other passengers and emergency responders due to the threat of a post crash fire, and a significant language barrier) it was not possible to establish specifically who was ejected during the accident. Based on the location of the motorcoach post crash and the statements of passengers and emergency personnel it is probable that any of those passengers who were forcefully ejected or fell through the broken or missing passenger side window openings.

An examination of the motorcoach interior as well as a review of medical records revealed documentation to support the seating locations of several occupants. The investigation revealed that the fatally injured passengers were seated in the following seats: 1C, 2C, 2D, 3B, 3D, 4B, 4C, 4D, 5A, 5C, 5D, 7A, 7C, 8D, 9D, 14D, and one passenger in the rest room. Occupants who sustained serious injuries were in the following seats: driver, 1D, 2B, 3A, 3C, 6B, 6C, 6D, 8A, 8C, 9A, 9B, 10B, 10D, 11C, 11D, 12A, 12B, 12D, 13A, 13B, 13C, 13D, 14A, and 14B. The passengers receiving minor injuries were seated in seats: 1A, 1B, 2A, 4A, 6A, 7B, 7D, 8B, 10A, 10C, 11A, 11B, 12C, and 14C.

Passenger and Witness Interviews:

It was not possible to conduct interviews with many of the passengers due to severity injuries as well as the significant language barrier (most only speak Vietnamese). The Human Performance and Survival Factor’s Group Chairman was successful in conducting interviews with five passengers.

Those passengers who were interviewed had little or no recollection of the pre-crash events stating they were sleeping or in one instance a young passenger was playing a video game.

The passengers indicated that after the accident there was some initial confusion however, they recalled the police and fire departments arrival quickly after the accident and began to care for the injured and search for additional victims. Some of the passengers expressed concern after arriving at the hospital in not knowing where or how family members and friends were. They stated that representatives from their church group and the Red Cross assisted and translated for them while they were in the hospital.

Follow-up interviews were conducted at the Vietnamese Martyrs Catholic Church in Houston, Texas. Twelve additional interviews were completed and all of the seating positions for the passengers were determined. Additional information regarding injuries and the accident sequence were determined based on these interviews. A total of 17 passengers were interviewed and a majority of the passengers were either asleep or preoccupied and did not hear or notice anything unusual until they (the bus) began fall from the bridge. According to several of the passengers the passengers in seats 9B and 12D were partially ejected and passengers in seats 3D and 6D were ejected. They were not sure if anyone else was partially or completely ejected.

Witness Interview

On August 14, 2008, a Safety Board investigator interviewed a motorist who was traveling north on US-75 behind the accident motorcoach. Based on her statement the following occurred: The motorist was returning to her home from a vacation when she observed the motorcoach pass her vehicle that was northbound on US-75 in excess of 65 mph. The witness advised she had her cruise control set at 65 mph and estimated the motorcoach passed her and was traveling at between 70-75 mph at the time of the accident.

After passing the motorist the motorcoach maneuvered back from the left passing lane into the right traffic lane about 5 car lengths in front of the motorist. The motorist stated she heard a “loud bang” followed immediately thereafter by seeing large sparks emanating from the right side front of the motorcoach. At that point she recalled seeing the right side of the motorcoach strike the guardrail on the bridge and vault over the concrete into a ditch.

She stopped her vehicle on the right shoulder and ran to assist the victims. Once at the crash site she dialed “911” and believing the accident motorcoach was a big RV she advised the Sherman Police/Fire dispatcher of the accident. The witness and her family remained on-scene to assist until public safety personnel arrived.

Emergency Response

Safety Board investigators met with representatives of the Sherman Police, Fire Departments, Grayson County Communications Center, and Texas Department of Public Safety regarding the emergency response. Both the Sherman Fire and Police Departments provided information concerning the emergency response to the accident as well as on-scene operations.

The City of Sherman Communications Center received the initial notification of the accident at approximately 00:45 hrs from a citizen traveling near the accident site. This notification was followed shortly thereafter by three additional cell phone calls from passersby who had stopped to assist. At 00:46 hrs the first Sherman Police, Fire, EMS units were dispatched to the scene and arrived at 00:50.

The first arriving police, fire, EMS personnel began the rescue and triage operations. The Sherman Communications Center staff contacted the Grayson County Communications Center that had been monitoring the situation and both communications centers worked cooperatively to alert and provide the resources requested by the Sherman Fire Chief, as to who was on-scene shortly after the first fire and rescue units and assumed the responsibility as the Incident Commander (IC).

The IC established a mobile command post near the accident site and along with fire, police, and EMS personnel from the City of Sherman and neighboring jurisdictions executed the search and rescue operation. During the triage and transport operation separate transfer points were established for ambulance and helicopter transport. By 01:08, within 23 minutes of the initial notification of the accident, the most critically injured patients were transported to area medical facilities via helicopter and ambulance.

By 02:39 all of the injured had been transported to 11 medical facilities within a 60 mile radius that had been alerted by the Grayson County Communications working in cooperation with the Sherman Communications Center. Police, Fire, and EMS personnel from 3 counties in Texas and Oklahoma participated. During the emergency the Sherman Fire Department IC activated a county and regional mutual aid plan and was successful in staffing or back filling all to the City of Sherman Fire and Rescue Stations.

Ground Ambulance:

Sherman Fire Department
Bells Fire Department
Denison Fire Department
Grayson Fire Department
McKinney Fire Department
Texas Vital Care
Preston Emergency Medical Service
Van Alstyne Fire Department
Bryan County Emergency Medical Service

Helicopter Ambulance:

Life Star, Sherman, TX
Sky Med (PHI) McKinney, TX
Care Flight, Frisco, TX

Medical Treatment Facilities	Patients Transported
Texoma Medical Center, Denison, TX	1
Wilson N. Jones, Sherman, TX	7
Parkland Health and Hospital System, Dallas, TX	5
McKinney Medical Center, McKinney, TX	8
Medical Center of Southeastern Oklahoma, Durant, OK	2
Baylor University Medical Center, Dallas, TX	2
Presbyterian Medical Center, Allen, TX	3
North Central Medical Center, McKinney, TX	3
Baylor Medical Center, Dallas, TX	2
Methodist Hospital, Dallas, TX	2
Harris Methodist Medical Center, Forth Worth, TX	1

State Medical Examiners Offices:

Dallas County Medical Examiners Office

Tarrant County Medical Examiners Office

Due to the location of the accident the Sherman Communications Center contacted the Texas Department of Transportation (TXDOT) at 01:20 hours to advise the Sherman Police Department was closing down US-75 at Park Street. At 0300 hours Sherman PD requested that signs, traffic cones, and a message board be set in place to alert traffic of the accident and detour information. The task was completed by TXDOT between 05:30 and 06:00 hours. TXDOT continued to provide support until about 11:30 hours, when the traffic lanes were reopened.

Emergency Response and Disaster Planning Information

Grayson County does have a current emergency response plan that includes all of the counties public safety agencies (law enforcement, fire, emergency medical) within the confines of Grayson County. In addition all of the areas medical facilities are partners in the response plan and are linked to the Grayson County Communications Center via direct phone line.

The emergency response plan includes an annex that provides a check list or systematic process for responding to a mass causality transportation accident. In this accident the staff of the Grayson County Communications Center worked with the Sherman Police Department to coordinate the deployment of Sherman Fire and Rescue personnel as well as alerting area fire departments and medical facilities and arraigning for air ambulance evacuation of the most seriously injured. Estimated 25-30 area fire and rescue department ambulances were utilized as well as 19 helicopters from four different regional air ambulance facilities.

In addition to the on-scene rescue and recovery activities being conducted by the Sherman and area Public Safety personnel the City of Sherman's Highway Maintenance Section also provided assistance at the accident site by placing signs, traffic cones, and a message board on US 75 and diverted all north bound traffic onto FM 1417 around the accident site. The Texas Department of Transportation also assisted by deploying a portable message board to notify motorists of the accident and potential delays prior to the accident site. The assistance provided by the Sherman and Texas State Highway Departments facilitated the expeditious flow of traffic on US 75 and provided motorists with timely information regarding the changing road conditions.

A post accident critique was conducted by the affected Public Safety agencies and it was determined the available public safety, medical, and community resources available were adequate to provide care for the victims. It was noted that although trauma tags were utilized on-scene in some instances they were changed without being cross referenced at least one hospital and that in one instance a hospital administrative supervisor declined to provide the IC with patient information incorrectly citing provisions of the HIPPA regulations. These issues have been addressed and were corrected following the accident.

Passenger Injury Information

Driver-M-52-Serious Traumatic injuries to the head, rib fractures, internal injuries				Passenger Boarding Door
Seat A	Seat B	Aisle	Seat C	Seat D
Seat 1A-M-7-Minor Multiple abrasions	Seat 1B-F-34-Minor Scrapes, abrasions, contusions	Row 1	Seat 1C-F-62-Fatal Massive head trauma, Bilateral rib fractures	Seat 1D-F-19-Serious Spinal fractures T-12, contusions of left ankle
Seat 2A-F-14-Minor Cervical strain contusion left thigh and right lower back and abrasions	Seat 2B-F-36-Serious Bilateral Rib fractures, transverse process fractures C-7, L2-4. Liver lacerations, R clavicle fractures, right hemothorax, pulmonary contusions	Row 2	Seat 2C-M-76-Fatal Unknown	Seat 2D-M-81-Fatal Multiple head trauma, subdural hemorrhage
Seat 3A-M-67-Serious Scalp lacerations, dislocated L elbow w/ avulsion fractures	Seat 3B-F-60-Fatal Serious Multiple right and left side rib fractures, internal hemorrhaging	Row 3	Seat 3C-M-31-Serious Mandible fractures, spleen lacerations, abrasions face, right arm, left leg	Seat 3D-F-29-Fatal Multiple blunt force trauma head, neck, chest, and abdomen
Seat 4A-F-45-Minor Abrasions to back, lacerations to head	Seat 4B-F-34-Fatal Ruptured Spleen, Leg hematoma forehead	Row 4	Seat 4C-F-59-Fatal Blunt force trauma to the head and neck, rib fracture right	Seat 4D-M-67-Fatal Unknown
Seat 5A-F-89-Fatal Unknown	Seat 5B-in lavatory	Row 5	Seat 5C-M-60-Fatal Multiple blunt force trauma injuries, basilar skull fractures, occipital dislocation, subdural and subarachnoid hemorrhage, multiple facial fractures	Seat 5D-M-84-Fatal Unknown
Seat 6A-F-71-Minor Reflux disorder, hypertension, chronic asthma, minor contusions, obstructive pulmonary disease	Seat 6B-F-65-Serious Subarachnoid hemorrhage, right wrist fractures, right humerus fractures, right orbital	Row 6	Seat 6C-F-33-Serious Bilateral rib fractures w/pneumothorax, right scapula fractures	Seat 6D-F-60-Serious Bilateral rib fractures, left clavicle fractures, right shoulder dislocation, left pelvis fractures, complex scalp/cheek avulsion, left orbital blowout fractures
Seat 7A-F-59-Fatal Blunt force trauma to the head and neck, rib fracture right side, right side femur fracture	Seat 7B-F-34-Minor Scalp lacerations, multiple abrasions to back and extremities	Row 7	Seat 7C-F-27-Fatal	Seat 7D-M-21-Minor Scalp and facial lacerations, multiple contusions
Seat 8A-F-45-Serious Contusions on upper back and left shoulder, contusion of right leg and knee	Seat 8B-M-12-Minor Multiple abrasions, lacerations face, extremities	Row 8	Seat 8C-F-48-Serious Right ulna fractures, liver lacerations, right kidney lacerations	Seat 8D-F-71-Fatal Ruptured spleen, C-3 fracture, and fractured tibia/fibula

Passenger Injury Information continued:

Seat A	Seat B	Aisle	Seat C	Seat D
Seat 9A-M-9-Serious	Seat 9B-M-14-Serious Multiple right rib fractures, Multiple skull fractures, left pelvis fractures, Bilateral clavicle fracture's, basilar skull fractures, left and right ear lacerations	Row 9	Seat 9C-Empty Seat	Seat 9D-F-50-Fatal Fatal multiple blunt force trauma temporal lobe cerebral, edema, significant subdural hemorrhage, commuted, pelvic fracture
Seat 10A-F-12-Minor Unknown	Seat 10B-F-11-Serious Unknown	Row 10	Seat 10C-F-50-Minor Multiple abrasions and lacerations to extremities, chest bruise	Seat 10D-M-38-Serious Right superior and inferior pelvic fracture's, left superior pelvic fractures
Seat 11A-F-12-Minor Multiple lacerations and abrasions	Seat 11B-F-25-Minor Unknown	Row 11	Seat 11C-F-44-Serious Fractures left scapula, leg lacerations scalp, head injury loss-of- consciousness	Seat 11D-M-54-Serious Unknown
Seat 12A-F-73-Serious Subarachnoid hemorrhage, C6-7 Trans proc fracture's, multiple right rib fracture's	Seat 12B-F-65-Serious Left clavicle fractures, left wrist fractures, left hip fractures, mandible fractures, left pneumothorax, spleen lacerations	Row 12	Seat 12C-F-13-Minor Multiple abrasions and lacerations	Seat 12D-F-57-Serious Bilateral rib fractures w/ hemothorax, avulsion right foot, trans proc fracture's L1-4
Seat 13A-M-54-Serious C-6 facet fractures, small subdural hematoma, 6cm scalp lacerations	Seat 13B-M-53-Serious Fractures/lacerations left acetabulum, C-5 fractures	Row 13	Seat 13C-F-38-Serious Right clavicle fractures, lacerations right ear, liver and kidney contusions, glass around neck and face	Seat 13D-F-41-Serious Subdural hemorrhage, multiple pelvis fracture's, spleen, liver and kidney injuries, multiple right rib fracture's
Seat 14A-M-63-Serious Multiple right rib fractures, pulmonary cont, left ulna fractures	Seat 14B-M-47-Serious Right femur neck fractures, right femur shaft fractures, open fractures right hand	Row 14	Seat 14C-M-54-Minor C-6 fractures, multiple abrasions knees and face	Seat 14D-F-49-Fatal ASM Wheelchair Lift Lavatory-F-59-Fatal

Legend: Gender (Male/Female), Age, Degree of Injury (Fatal, Serious, Minor, and None)

Henry F. Hughes, Senior Accident Investigator
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