

**SURVIVAL FACTORS GROUP FACTUAL REPORT**  
**(20 Pages)**



**National Transportation Safety Board  
Office of Highway Safety  
Washington, DC 20594**

**Survival Factors Group Factual Report**

**A. ACCIDENT**

**NTSB File # HWY-05-MH-035**

Accident Type: Motorcoach Fire  
Date and Time: September 23, 2005 at 6:07 a.m. Central Daylight Time  
Accident Location: Northbound Interstate 45, .2 miles south of Mars Road,  
Near Wilmer, Dallas County, Texas  
Vehicle#1: 1998 MCI 54-passenger Motorcoach  
Motor Carrier: Global Limo  
Fatalities: 23  
Injuries: 14

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## **C. ACCIDENT SUMMARY**

On September 23, 2005 at about 6:07 a.m. CDT, a 1998 MCI 54-passenger motorcoach was traveling northbound on Interstate Highway 45 (I-45) with 44 passengers and the driver, evacuating in anticipation of Hurricane Rita. The passengers were from an assisted living facility in Bellaire, Texas, and most needed to be carried or assisted onto the motorcoach by firefighters. The trip began about 2:30 p.m. on September 22, 2005. The motorcoach had been traveling over 13 hours in heavy traffic when the right rear (#3 axle) tire went flat and needed to be changed near the FM 1126 overpass in Rice, Texas. The tire left approximately 6,800 ft. of tire marks before the motorcoach came to a stop. A service mechanic was summoned to assist and he changed the tire. The motorcoach continued north on I-45 for about 26 miles.

At approximately 6:00 a.m. a motorist noticed the right rear (#3 axle) hub was glowing red/white hot. He was able to stop the motorcoach in the left traffic lane and told the driver (who did not speak English) of the danger. The motorcoach driver proceeded to pull the vehicle to the right shoulder, where he exited along with a nursing staff-passenger (the trip coordinator) and two other nurse-passengers and saw flames coming from the right rear wheel well. The passengers, with help from the nursing staff on-board and other motorist, began to disembark. At 6:07 a.m. the first call was made to 911. Fourteen intact oxygen cylinders were recovered from the motorcoach along with parts to possibly 4 others. One of those cylinders shows evidence of failure. Six nursing staff-passengers on the vehicle, a parent of one of the nursing staff, and 14 patient-passengers were able to exit the burning vehicle. Twenty-three patient-passengers, many of those who needed assistance in walking or needed to be carried off the vehicle were, unable to escape.

## **D. DETAILS OF THE INVESTIGATION**

The Survival Factors Group focused its investigation on the following,

1. Documentation of the interior fire damage of the motorcoach,
2. Passenger egress,
3. Emergency response,
4. Evacuation preparedness,
5. Medical and pathological aspects of the accident,
6. Interviews with surviving passengers, first responders and witnesses.

### **1. INVOLVED VEHICLE**

The accident involved a 1998 Motorcoach Industries 102EL3 (Renaissance) 54-passenger motorcoach.

## 2. 1998 MCI

### 2.1 MOTORCOACH EXTERIOR DAMAGE

The fire resulted in the destruction of the majority of the motorcoach's fiberglass body although the steel frame of the chassis, engine compartment, and aluminum cargo doors remained intact. The left (driver) side of the motorcoach was burned to a lesser degree than the right side. From the base of the windows upward towards the roof, only the tubular frame structure remained. The aluminum cargo doors along both sides of the motorcoach remained operational.

The windshield and all the side windows in the motorcoach were broken out. According to witness statements, the passenger side of the windshield and several windows along both sides of the motorcoach were broken out during rescue efforts by some of the passerby motorists that assisted in the evacuation.

### 2.2 MOTORCOACH INTERIOR DAMAGE

The interior inspection revealed that the motorcoach was equipped with a bucket seat for the driver. Behind the driver's seat were thirteen rows with two reclining seats on each side of the center aisle. At the back of the motorcoach, on the driver's side, across from the lavatory, was a fourteenth two-person bench seat. A post-fire inspection of all the seat anchors revealed that they all remained intact, except for the wall anchor in the second row on the right side, which appeared to have disintegrated during the fire.

A measurement taken of the aisle width of an undamaged motorcoach of the same make and model showed a width of between 14 inches and 14 ½ inches, from arm rest to arm rest. There are no Federal standards for aisle width for motorcoaches; however, there is a Federal standard<sup>1</sup> for the total width of a vehicle.

The interior of the motorcoach was completely burned out. The majority of metal seat frames and a portion of some of the seat cushions remained. The fiberglass stairwell was almost completely burned away.

The Federal Motor Vehicle Safety Standard 302<sup>2</sup> (FMVSS) addresses the burn resistance requirements for materials in all motor vehicles. Testing requires that a material shall not burn, nor transmit a flame front across its surface, at a rate of more than 4 inches per minute. If a material stops burning before it has burned for 60 seconds from the start of timing, and has not burned more than 2 inches from

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<sup>1</sup> 23 Code of Federal Regulations Part 658.15 (a) No State shall impose a width limitation of more or less than 102 inches, or its approximate metric equivalent, 2.6 meters (102.36 inches) on a vehicle operating on the National Network, except for the State of Hawaii, which is allowed to keep the State's 108-inch width maximum by virtue of section 416(a) of the STAA.

<sup>2</sup> Title 49 Code of Federal Regulations 571.302

the point where the timing was started, it shall be considered to meet the burn-rate requirement. The standard, as stated, is intended to give a measure of the fire resistance of interior materials to "small" ignition sources. The ignition source does not matter (internal or external).

According to an MCI representative, they do not test smoke for content, nor is there a requirement for them to do so, however they do require that all components meet FMVSS 302 requirements. Additionally, the seat fabrics used in MCI coaches are constructed of 85 percent wool and 15 percent nylon fabrics and as such, are self-extinguishing, burning only when exposed to direct flame. MCI obtains certification of FMVSS 302 compliance from the seat manufacturer (Astron Amaya Company) and performs periodic verification tests to confirm compliance. The seats in this particular coach were covered with Holdsworth™ fabric on which they have performed numerous tests, with the burn stopping as soon as the test flame is extinguished. The seat cushion material is a foam material which they have also tested and found burn rates of slightly over 2 inches per minute, well below the 4 inches per minute limit for FMVSS 302. It should be noted that in the "purpose" section of FMVSS 302, it reads, "*especially those originating in the interior of the vehicle for sources such as matches or cigarettes*".

Based on the post-fire inspection, the motorcoach was equipped with a total of seven windows along each side with all but the first window (pentangular in shape) on both sides being emergency exit windows. They are designed to meet FMVSS 217<sup>3</sup> which addresses Bus Emergency Exits and Window Retention and Release. According to an MCI representative, the operational requirements for the windows meets FMVSS 217 requirements. The windows pivot on a hinge point at the top.

The interior inspection also revealed that the motorcoach was carrying 10 oxygen canisters in the passenger seating compartment. Two of the 37 nursing home residents on the motorcoach were using oxygen. According to the healthcare supervisor on-board, both residents had the oxygen canisters set at 3 liters per minute flow rate. See the Hazardous Materials Group Chairman's report for exact location of the oxygen canisters and condition of each of the canisters recovered within the passenger seating compartment.

The Department of Transportation (DOT) has a guidance plan for the safe transportation of medical oxygen for personal use on buses and trains. It should be noted that this guidance plan was first released the afternoon of the fire September 23, 2005. The guidance plan was written by the Pipeline and Hazardous Materials Safety Administration (PHMSA)<sup>4</sup>. The guidance plan lists precautions that bus and

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<sup>3</sup> Title 49 CFR 571.217 regulates emergency exit windows. It establishes requirements for the retention of windows other than windshields in buses and establishes operating forces, opening dimensions, and markings for bus emergency exits.

<sup>4</sup> In the U.S. Department of Transportation (DOT), PHMSA - the Pipeline and Hazardous Materials Safety Administration has public responsibilities for safe and secure movement of hazardous materials to industry and consumers by all transportation modes, including the nation's pipelines.

train operators should take to assure that medical oxygen being transported for passengers' personal use is handled and transported safely. The plan outlines precautions that should be taken when transporting oxygen canisters in both the passenger compartment and cargo compartment.

A review of the guidance plan revealed the following that pertain to this trip

- Oxygen cylinders should be transported on a bus or train only when medically necessary.
- The number of cylinders inside the cabin should be limited to the extent practicable. If possible, transportation in the passenger cabin should be limited to one cylinder per person.
- Each cylinder should be secured to prevent movement and leakage. "Secured" means that the cylinder is not free to move when the vehicle is in motion.

According to the Code of Federal Regulations Title 49 Part 177.870, on the occasions of multi-day trips, passengers are allowed to bring more than one oxygen cylinder into the passenger cabin to sustain them for the duration of the trip.

## 2.2 MOTORCOACH SAFETY SYSTEMS

According to the build sheet supplied by the manufacturer, the driver's seat position was equipped with a two-point lap belt. Inspection of the driver's restraint could not be conducted due to the fire having burned the belt webbing and the buckle and latch were lost in the debris.

As previously mentioned, there were six emergency exit windows on both sides of the motorcoach. The emergency exit windows are double-glazed units with a tempered outside pane and a laminated inside pane and weighed 99 pounds each. The exit windows have a bar along the bottom of the window that in order to open a person puts their fingers under the bar and flips the bar upward and then pushes the window outward from the bottom. When the motorcoach is in the upright position, the bottom of the emergency window openings are approximately 7 feet from the ground.

The Safety Board fire investigators and an MCI representative, who inspected the window hinges following the fire, attempted to determine whether the windows had been opened and/or were operable. They could not make that determination because the fire destroyed the majority of the framework and latches.

Eyewitnesses stated that the third window on the left (driver's) side was opened at some point during the evacuation of the motorcoach, allowing them to lift one rescuer up into the vehicle in an unsuccessful attempt to reach in and pull out an elderly women seated adjacent to the window. .

According to an invoice dated 6/15/2005 obtained from MCI by the Vehicle Group Chairman, the owner of Global Limos instructed Motor Coach Industries (MCI) to provide an estimate and conduct repairs on emergency windows because they did not latch properly on the accident motorcoach. According to the invoice, the MCI technician stated that 9 emergency windows had bad bushings and latches and they were able to replace 3 on the left side and 2 on the right side but the customer (Global Limo) needed to order 4 more since there were none left in inventory. The invoice was not specific concerning which windows were operational and which ones needed further repairs. In addition, a note on the invoice stated that all the latches and strikers on the emergency windows needed to be replaced. There is no documentation available showing whether these repairs were completed.

Based on the NTSB's inspection and the manufacturer's build sheet, the motorcoach was equipped with two roof hatches. According to the driver, he attempted to open one of the roof hatches to help vent the smoke out of the cabin. The NTSB examined the roof hatches in an attempt to determine if either of the hatches had been opened and to determine whether both were operational. A determination on whether they were operational could not be made due to fire damage. The inspection of the latch on the front hatch revealed it was still in the locked position. In addition, interviewees aboard the motorcoach could not confirm the driver's statement. However, an MCI representative noted that the hatch is self closing, unless a pivoting stop is positioned to hold the hatch in the open position.

The NTSB inspection of the safety equipment in the motorcoach found the following;

- A charred box, which appeared to be a first aid kit, was found on the floor in the front right seat position.
- A 5-pound dry chemical fire extinguisher, which was punctured and still partially latched in its housing bracket under the second seat on the right (passenger) side.

According to an interview with the motorcoach driver, he attempted to retrieve the fire extinguisher but was unable to completely release it from its holding bracket. Other passenger interviews corroborated the fact that the driver was attempting to get something from under the seat but was unable to retrieve it. It is unknown what type of experience or training the motorcoach driver had in retrieving or using the fire extinguisher. According to an MCI representative, the location of the fire extinguisher has not change in over 35 years and to his knowledge there has never been a complaint as to its location or the holding bracket.

According to an MCI representative, within the past few years they have produced motorcoaches with an optional vehicle fire suppression system designed by AMEREX Corporation. MCI is installing an AMEREX system that uses

thermostatic sensors and depending on coach model, uses three or four nozzles in the engine compartment to discharge a model V25, type ABC cylinder containing ammonium phosphate. The cylinder is mounted in a baggage compartment.

A review of an AMEREX brochure revealed that its pre-engineered dry chemical fire suppression system is designed and can be installed on over-the-road buses to stem a fire before it can reach the operator or passenger areas. Depending on the type of system installed, the activation of the suppression agent can be done either manually or be automatically. A brief synopsis of how the system works follows

- The system uses either thermostatic heat sensors or an optical flame detection device to detect excessive heat or fire in areas prone to catch fire (i.e., engines, charging systems, hydraulic systems, braking, and control systems)
- Once the fire or excessive heat is detected, an electrical circuit is closed which provides current to an electrical actuator.
- The actuator in turn opens the valves of the cylinders releasing the suppressant agent

Depending on the location, the system has predetermined flow rates and nozzle discharge quantities dispensed through specific flexible hose and/or stainless steel tubing sizes of designed minimum and maximum lengths connected with specific numbers and sizes of fittings and couplings. Power to operate the system is drawn from the vehicle battery or provided by a 24-hour self-charging back-up battery inside the control panels drawn from the vehicle battery.

In addition to MCI, other motorcoach manufacturers have begun incorporating fire suppression systems in their vehicles. According to a representative from ABC Bus Company, which is a distributor of Von Hool motorcoaches in Europe, they are also starting to install Kidde Dual Spectrum fire suppression systems in their motorcoaches. This system is similar in operation as the AMEREX system MCI is installing.

Research of firewalls<sup>5</sup> in automobiles and motorcoaches revealed that there are no specific standards in the Federal Motor Vehicle Safety Standards (FMVSS). Manufacturers<sup>6</sup> that were contacted stated that basically, firewalls in rear engine motorcoaches between the engine compartment and the passenger compartment consist of nothing more than several sheets of stainless steel with a non-flammable (fiberglass insulation) sound deadening material sandwiched between. School bus manufacturers stated that for front engine vehicles, the firewall consists of a reinforced metal bulkhead typically made from stainless steel, titanium, and/or carbide composites between the engine and the front foot well below the windshield.

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<sup>5</sup> The firewall is typically located between the passenger compartment and the engine compartment. It is designed to protect the occupants from a potential fire in the engine compartment.

<sup>6</sup> MCI, Von Hool, and Prevost

Research into the construction of wheel wells revealed that there are no specific standards in the Federal Motor Vehicle Safety Standards (FMVSS). School bus<sup>7</sup> and motorcoach manufacturers that were contacted stated that wheel wells are primarily constructed with a layer or layers (depending on thickness) of sheet metal, fiberglass, or steel, titanium, and/or carbide composites or a combination of several of these materials to protect objects from penetrating into the passenger compartment.

Firewalls are found in aircraft and in specially prepared cars for competition use. A firewall in a racing vehicle seals the fuel tank apart from the interior of the vehicle. In the event of an accident resulting in fuel spillage, the firewall can prevent burning fuel from entering the passenger compartment, where it could cause serious injury or death. Firewalls are fitted so that they form a complete seal

A quick search of firewalls in aircraft revealed requirements on firewall construction<sup>8</sup>. According to the Federal Regulation, each firewall and shroud must-

- (a) Be so made that no hazardous quantity of air, fluids, or flame can pass from the engine compartment to other parts of the airplane;
- (b) Have all openings in the firewall or shroud sealed with close-fitting fireproof grommets, bushings, or firewall fittings;
- (c) Be made of fireproof material; and
- (d) Be protected against corrosion.

Currently the Safety Board is investigating two other motorcoach fires<sup>9</sup>. Both incidents involved the entire coach being consumed by a fire and neither involved serious or fatal injuries.

An article published in The New York Daily News on January 18, 2006 titled "*Probers check on potential for bus fire disaster*" discuss how New York state investigators are launching a multiyear review into the rise in bus fires. According to the article, the number of bus blazes in New York statewide has more than doubled in recent years – from 16 in 2002 to 34 in 2004, according to the state's Transportation Department. Additionally, the article states that in New York City's Transit Authority's fleet, bus fires have nearly tripled, jumping from 6 in 2003 to 17 fires in 2005.

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<sup>7</sup> International and Thomas Built

<sup>8</sup> Code of Federal Regulations, Title 14, 125.145-- Subpart E\_Special Airworthiness Requirements Sec. 125.145 Firewall construction:

<sup>9</sup> HWY-06-FH-002 Meriden, Connecticut and HWY-06-IH-009 Banning, California

## 2.3 PASSENGER LOADING AND EGRESS

The Fire Chief of the Bellaire Fire Department said that from approximately 12:10 p.m. until 2:00 p.m., he and four other firemen loaded the 37 assisted living facility residents onto the motorcoach. The Chief said they did not load the luggage or oxygen bottles into the motorcoach. He said that they placed the lighter and somewhat more ambulatory residents towards the rear of the motorcoach, while the lesser ambulatory residents were placed in the middle and the heavier less ambulatory residents were placed towards the front. The Fire chief said he did this in order to make unloading easier for the heavier residents.

Based on interviews with 10 of the 14 surviving passengers/facility residents, the 6 healthcare workers on the motorcoach, several motorist that helped take passengers off the motorcoach, and the motorcoach driver, it was determined that all the survivors exited the bus out the front loading door. All the healthcare workers exited under their own power. Statements by some of the nursing home passengers indicated “they were pulled, pushed, or dragged out the front loading door”. Only two nursing home residents seated behind row 3 survived.

The post-fire inspection conducted by the Dallas County Medical Investigator and the NTSB revealed that 16 deceased passengers remained in their seats. An additional five of the deceased passengers were found in the center aisle several rows from their original seating positions. One of the five deceased passengers, who had been seated in row 10, was found near the front of the motorcoach in the aisle adjacent to row 1. Two other deceased passengers were found in aisle seat positions different than their original pre-fire seat positions.

The driver said that prior to exiting the bus, he attempted to open windows number two and three on the left (driver’s) side but he was only able to unlatch the third window. Additionally, the driver stated that he also opened one of the roof hatches (unknown if the forward or rear hatch) in order to vent the smoke in the cabin. The six health care workers on the motorcoach said that none of them attempted to open any emergency windows, nor did they see anyone open any windows.

Based on the passenger interviews, passengers either didn’t know that the motorcoach was equipped with emergency windows or couldn’t see the latches for opening them. Several nurses stated that the bus driver should have conducted a pre-trip safety briefing, showing everyone how to open the emergency windows in case of an emergency, similar to what is done on airplanes. Additionally, some passengers stated that having a rear or side emergency exit would have helped get more of the passengers with disabilities off the motorcoach.

The NTSB Recommendations H-99-013<sup>10</sup>, 014<sup>11</sup>, 17<sup>12</sup>, and 18<sup>13</sup>. encourage the motorcoach industry to provide a pre-trip safety briefing for passengers.

The NTSB reviewed a document titled, *Suggested Evacuation Procedures in Case of Fire or other Emergency*<sup>14</sup> written by the Bus Industry Safety Council, an affiliate of the American Bus Association (ABA). As a result of this document and a video titled *Welcome Aboard*, which the United Motorcoach Association (UMA) developed, these recommendations have been classified as, “*Closed, Acceptable Action*”. It should be noted that according to the Senior Vice President of Government and Industry Relations for the UMA, the final written script of motor coach passenger safety information to be available in cases where motorcoaches are not video equipped, has not yet been approved by the Federal Motor Carrier Safety Administration (FMCSA).

A synopsis of the document revealed the following:

After the driver pulls off the road he is to turn on his hazard lights, set the parking brake, and turn off the engine. He is then to tell passengers of the threat of fire or other emergency and assure them that their safety is his first priority. If there are passengers with disabilities on the coach and they require help in exiting, ask for volunteers to help them or assure them that the driver will help them. Next they are to open or ask others to open the roof hatches to ventilate the smoke from the cabin and ask that everyone evacuate in an orderly manner. The driver is to tell someone to call 911 and then move to assist passengers using mobility aids or who cannot exit the coach through the lift access doors or other exist as required. Next the driver is instructed to check for passengers in the lavatory, making sure it is empty, while retrieving the fire extinguisher and first aid kit. The plan states that the fastest route of evacuation is through the front door. The document concludes by stating that the driver should attack the fire if possible and do so carefully, but not to endanger themselves or allow others to endanger themselves.

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<sup>10</sup> H-99-13- The NTSB recommends that the American Bus Association: Encourage your members to provide pre-trip passenger safety briefings.

<sup>11</sup> H-99-14- The NTSB recommends that the American Bus Association: Encourage your members to develop training programs for their drivers on how to make pre-trip passenger safety briefings.

<sup>12</sup> H-99-017- The NTSB recommends that the United Motorcoach Association: Encourage your members to provide pre-trip passenger safety briefings.

<sup>13</sup> H-99-018- The NTSB recommends that the United Motorcoach Association: Encourage your members to develop training programs for their drivers on how to make pre-trip passenger safety briefings.

<sup>14</sup> At the bottom of the document it states that the suggestions are intended to offer motorcoach operators one means of establishing a professional and effective motorcoach program. The document also states that the ABA does not endorse the suggestions or in any way guarantee that compliance with the suggestions will ensure a safe motorcoach operation. The document continues by stating that the ABA does not assert the suggestions are the exclusive means of establishing a professional or effective safety program.

As the above document indicates, the guidelines are for the driver to do something after the trip begins and when an emergency situation arises. It does not provide for a briefing to the passengers before the trip begins.

As stated above, the driver needs to be able to communicate with his passengers to not only inform them of the threat of fire or other emergency, but to be able to assure them that their safety is his first priority, and tell everyone to evacuate in an orderly manner. Based on interviews with the head nurse on the motorcoach and other healthcare staff/passengers, the driver only spoke Spanish and was only able to communicate with the head nurse since she spoke some Spanish.

Both Peter Pan Bus Lines and Greyhound Bus Lines have policies for handling passengers with disabilities. Both bus lines request a 48-hour advanced notice and offer the assistance of the bus driver to help with every reasonable request. If requested, a personal care attendant is allowed to travel with the disabled passenger at a reduced rate. Both policies allow disabled passengers to travel with portable oxygen and respirators and allow a maximum of 2 oxygen canisters aboard the bus and 2 below in the cargo area.

The purpose of the Americans with Disabilities Act (ADA), Public Law 101-336, is to extend to people with disabilities civil rights similar to those already available on the basis of race, color, national origin, sex, and religion through the Civil Rights Act of 1964. The law which was enacted in 1990, prohibits discrimination on the basis of disability in employment, State and local government, public accommodations, commercial facilities, transportation, and telecommunications. The primary purpose of these regulations is to ensure equal opportunity and accessibility for persons with disabilities in buildings and all modes of public transportation by creating design requirements (ramps, handrails, wheelchair lifts, and tie downs). A search for laws and regulations for ensuring rapid egress of persons with disabilities from any modes of transportation resulted in none being found. The motorcoach in this incident was not equipped with any handicap access points (i.e., wheelchair lift access doors).

According to an MCI representative, there are no MCI coaches with rear or side exit doors (other than wheelchair lift access doors). To his knowledge, there are no motorcoaches built in the U.S. or Canada with a side exit door. He added that when incorporated, the side exit door would consume space, and would tend to make the seats behind the doors less desirable due to restricted visibility.

The MCI bus in this accident was not equipped with a wheelchair lift; however, according to an MCI representative, they have produced wheelchair lift equipped coaches since 1985. To date, they have manufactured more than 3000 coaches with wheelchair lifts. All of their current models, as well as any coach produced since 1987, could have been purchased with a wheelchair lift, with the exception that when they first released the 102EL3 (E4500) model coach

(motorcoach in this fire), the wheelchair lift development had not been completed for this model. According to MCI, the first 102EL3 with a wheelchair lift was built in 1999. Since then they have manufactured 112 of the 102EL3 (E4500) model motorcoaches with wheelchair lifts.

According to a representative from ABC Bus Company, a typical European motorcoach has a side exit door, which can only be operated by the driver. The exit door is located on the right (passenger side), forward of the rear tandem wheels on the level of the cargo storage bin. Upon entering the door, the lavatory is located directly to the right and three steps go up to the cabin level. A review of their website<sup>15</sup> confirmed this configuration.

## 2.4 MOTORCOACH CARGO

Based on the inspection, the motorcoach was transporting the following in the lower cargo bins;

22 wheelchairs	4 wheeled walkers
1 3-pronged walker	1 pair of crutches
1-30 pound container of R-134a Freon	2 boxes of washcloths
2 boxes containing 18 adult diapers	1 box of toilet paper
2 boxes of 100-count vinyl exam gloves	Binders with passenger medical information
Luggage and plastic bags full of clothing for driver and passengers	4 boxes containing 12 MRE (Meals-Ready to- Eat)
Wheeled crate capable of carrying a total of 9 Oxygen bottles	3 cases of Aquafina water bottles 16.9 fluid ounces each

## 2.5 BRIGHTON GARDENS EVACUATION POLICY

Under current Texas law, only licensed facilities are required to maintain a written emergency preparedness and response plan; however the law does not address the quality of an existing licensed facility’s plan. Bright Gardens is a privately owned and licensed facility.

The Brighton Gardens Senior Care Living Center has a Hurricane Preparedness Plan and an Evacuation Policy<sup>16</sup> (Attachment #1) as required by the state of Texas. The hurricane preparedness plan simply states the following;

- Three days prior to the predicted landfall they will
- Notify family members of the situation.
  - Encourage families to come and get their loved ones.
  - Windows will be boarded up to create a safe area to protect them.

<sup>15</sup> <http://www.vanhool.be>

<sup>16</sup> The evacuation policy is titled, “Preparing the Community for a Complete Evacuation”.

- Have supplies, food, and medication for the residents to last 5 days.
- If they decide to evacuate, they will provide families of residents the evacuation location.

Two days prior to the predicted landfall

- A final decision to evacuate or to stay on the property would be made with the assistance of the local authorities and the Sunrise Senior Living Area and Regional Team<sup>17</sup>.

If the evacuation is decided upon, Brighton Gardens will

- Follow the Evacuation Policy: “*Preparing the Community for a Complete Evacuation*” (Attachment #1)
- Food and supplies will be ordered
- Prepare medical records to be sent with residents
- Prepare clothes and equipment to go with residents
- Place identification on residents and belongings
- Prepare food, water, juice for each resident to have during evacuation
- Transportation arrangements will be confirmed
- Contact resident family on final decision to evacuate
- Hold resident meeting to notify residents

According to a Sunrise Senior Living representative, the facility has several wheelchair accessible vans that are used for smaller outings by residents. The representative stated that because of the number of residents being evacuated and the fact that the vans were not equipped with restroom facilities, they decided that using a motorcoach was best suited for the anticipated 4-hour drive to the Dallas/Fort Worth area.

According to the Vice President of Sales and Marketing and the Vice President for Operations for Sunrise Senior Living, who together arranged transportation for the Brighton Gardens residents, there are no formal written procedures for arranging transportation for their residents. Both these representatives stated that they are responsible for a district that included Mississippi, Louisiana, and Texas but not Florida. When asked if they had conferred with the district representatives for Sunrise owned facilities in Florida on how they handled previous evacuation arrangements, they said they had not

According to Sunrise Senior Living representatives, they originally located the Bus Bank through a Google search prior to Hurricane Katrina. They stated that during Hurricane Katrina the Bus Bank helped them find two buses to evacuate residents from two of their coastal Louisiana area nursing homes (neither bus being handicapped equipped). The representatives stated that there were no problems using the Bus Bank during that evacuation.

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<sup>17</sup> Sunrise Senior Living is the parent company and management for the Brighton Gardens Senior Care and Living Center

The representatives said that when they initially contacted the Bus Bank September 21, 2005 for evacuation of their Brighton Gardens facility, they were told that FEMA had taken 300 coach buses from their pool and they didn't have any left. According to the Sunrise Senior Living representatives, a short time later the Bus Bank called the representative back and informed him that they located two coach buses to transport the Brighton Gardens residents.

According to the Sunrise Senior Living representative, he did not even know which bus companies the Bus Bank had contracted. He said he didn't think to inquire since things had worked out so well with the previous evacuations from the two Louisiana coastal area nursing homes during hurricane Katrina. The representative felt that the Bus Bank would have checked on the contracted bus company's qualifications. When asked if they specifically requested coach buses with wheelchair accessibility from the Bus Bank, the representative replied that coach buses were in short supply and being that Brighton Gardens was an assisted living facility; nurses would be on board to help the residents.

An interview with the Director of Texas Building and Procurement Commission who with the Texas State Emergency Operations Center under the Texas Department of Emergency Management, was responsible for the coordination of transportation for state owned nursing home facilities, estimated that only twenty percent of the buses dispatched to state owned nursing facilities during the Hurricane Rita evacuation were wheelchair accessible (had wheelchair lifts).

On February 20, 2006, the final report from the Task Force on Evacuation, Transportation, and Logistics was officially received by the Governor of Texas. The report was completed as a result of the governor having set up a task force in October 2005 to look at how the coordinated response efforts of state and local officials, non-profit organizations, and the private sector responded to these disasters (Hurricanes Katrina and Rita). Five key areas in which recommendations were made included: command, control and communications, evacuation of people with special needs<sup>18</sup>; fuel availability; traffic flow; and public awareness.

One of the most important recommendations directed all licensed and unlicensed special needs facilities to maintain evacuation plans that have been approved by the local jurisdiction and the Regional Unified Command.

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<sup>18</sup> People with Special Needs are defined as "those who can not take care of themselves during an evacuation". This includes elderly, individuals with physical and mental disabilities and their caregivers.

### 3. MEDICAL AND PATHOLOGICAL INFORMATION

#### INJURY ICAO CODES<sup>19</sup>

INJURIES	DRIVER	PASSENGERS	TOTAL
FATAL	0	23	23
SERIOUS	0	2	2
MINOR	1	19	20
NONE	0	0	0
TOTAL	1	44	45

The Safety Board documented the injuries incurred by the driver and 44 passengers. All the injury descriptions for the bus driver and passengers are based on interviews and information provided by the treating hospitals. The Dallas County Medical Examiner provided detailed autopsy information on the twenty-three fatally injured passengers.

#### 3.1 HOSPITAL INFORMATION

The twenty-three passengers who were unable to evacuate the motorcoach were pronounced dead at the scene of the fire and were later transported to the Dallas County Morgue for autopsies. The driver and fourteen passengers were transported to two area hospitals with all but one passenger being released the following day. The treating facilities are as follows:

Parkland Memorial Hospital  
5 passengers treated and 1 passenger hospitalized

Baylor Hospital  
8 passengers treated and the bus driver who was treated and released the same day

Dallas County Medical Examiner  
23 autopsies completed

Based on medical records and transport records, the majority of treated passengers and the driver sustained various degrees of smoke inhalation. One passenger sustained a broken arm while several other passengers had minor lacerations, contusions and burns.

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<sup>19</sup> 49 CFR 830.2 defines a fatal injury as: any injury that results in death within 30 days of the accident. A serious injury as: an injury which requires hospitalization for more than 48 hours, commencing within seven days from the date the injury was received; results in a fracture of any bone (except simple fractures of the fingers, toes, or nose); causes severe hemorrhages, nerve, muscle, or tendon damage; involves any internal organ; or involves second or third degree burns, or any burns affecting more than 5 percent of the body surface.

#### 4. EMERGENCY RESPONSE

The Dallas County and Wilmer dispatchers were notified of the fire through the 911 system at 6:07 a.m. and 6:08 a.m. respectively. The first call from the Wilmer dispatch went out at 6:08 and at 6:12 a.m., two officers from the Wilmer Police Department were the first to arrive at the scene of the fire. One of the Wilmer Police Officers attempted to enter the motorcoach in order to help the elderly passengers exit the motorcoach, while the other directed traffic away from the burning vehicle. At 6:15 a.m., two deputies from the Dallas County Sheriff's Department arrived and were about to enter the motorcoach in an attempt to assist in removing passengers from the motorcoach when the first explosion occurred, preventing them from entering. The Wilmer and Hutchins Fire Departments arrived on scene at 6:24 a.m. The Hutchins FD drove by the fire scene in the southbound lane, exited at the Malloy Bridge and came back via the northbound lanes and parked on the north side of the motorcoach. Due to traffic being backed up in the northbound direction, their arrival on scene was slightly delayed. The Wilmer FD pulled up near the center median heading southbound and arrived, according to their logs, at the same time as the Hutchins FD. According to personnel from both fire departments, by the time they arrived, the motorcoach was completely engulfed in fire. The Hutchins FD was first to start extinguishing the fire from the right (passenger) side of the motorcoach while the Wilmer FD initially started extinguishing the adjacent grass fire prior to attacking the bus fire from the left (driver's) side.

Thirteen local emergency service agencies responded to the scene of the fire. Nine ambulances from four agencies and a private ambulance service responded to the fire with seven ambulances being utilized.

Based on interviews with first responders and dispatchers, response to the scene of the fire was slightly delayed for 4 reasons

- Initial 911 calls given to the dispatcher and relayed to responders gave the accident location as either the next exit north or 2 exits north of the scene of the fire.
- Vehicular traffic from hurricane evacuees driving north on I-45 delayed the response times for several agencies responding to the fire.
- Communication with the Wilmer Dispatch was delayed due to only one dispatcher being on duty (normal operation for this small community) and having to handle all in-coming and outgoing calls.
- The Wilmer Fire Department is a partial pay/partial volunteer agency. During the night shift they have only 2 firefighters/EMTs in the firehouse. They had to wait for volunteers to arrive before departing.

According to the City Manager of Wilmer and the Police Chief, the Wilmer Dispatch office will be installing two 4-channel CD loggers with digital voice recorders for 911 calls, prior to May 2006. The city has already installed the

COAX cable, transmitter towers, and mobile radios and is waiting for the console with base station radios to arrive.

### **Agencies that responded in order to transport injured passengers**

Hutchins Fire Department – 2 ambulances, and 1 engine unit  
Lancaster Fire Department – 1 ambulance and 1 ladder unit  
Dallas Fire and Rescue – 1 ambulance, and 2 engine units  
Life Flight (land based ambulance) – 2 ambulances, 1 transported  
Texas Lifeline Corporation (TLC) – 5 ambulances, 3 transported

### **Other Responding Agencies**

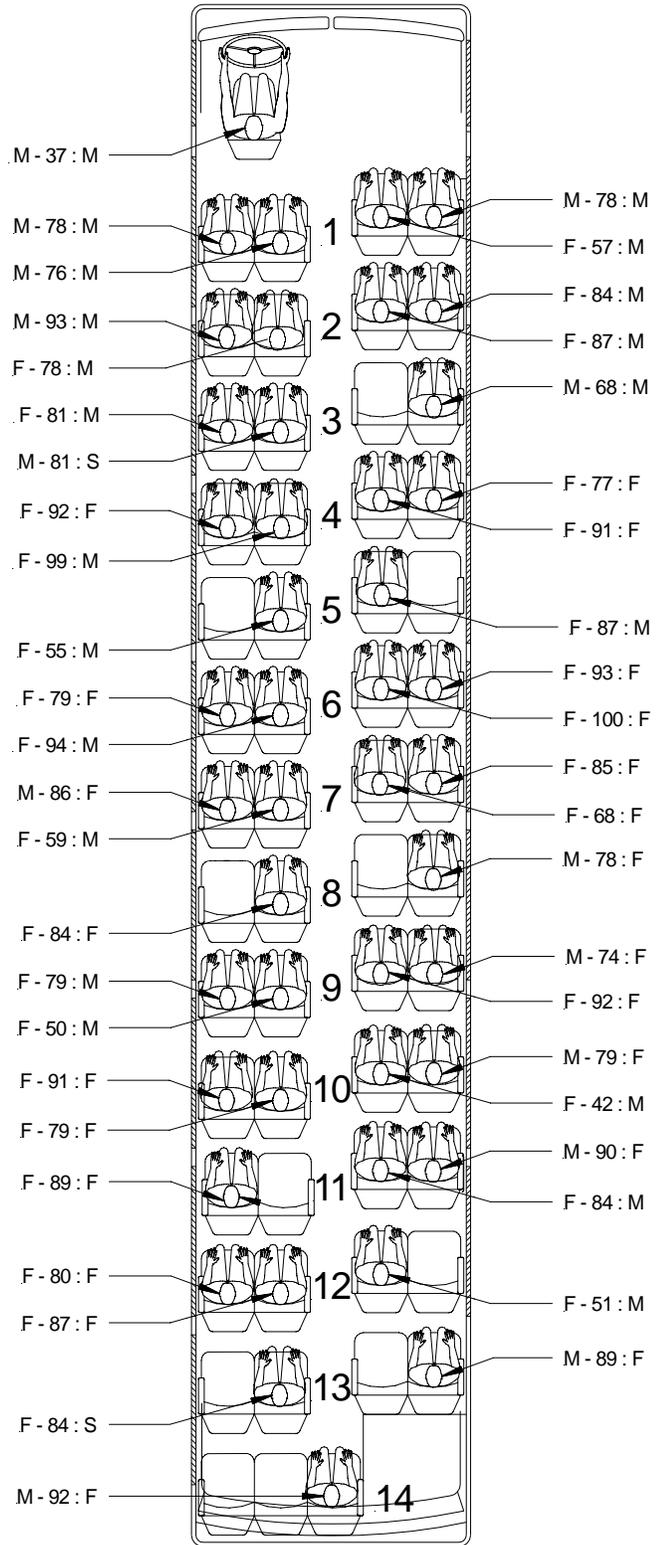
Seagoville Fire Department – 1 engine unit  
Ferris Fire Department – 1 engine unit  
Dallas County Fire and Rescue – 1 engine  
Combine Fire Department – 1 tanker and 1 engine unit  
Wilmer Police Department – 2 police units, 1 engine unit and 2 booster trucks  
Dallas County Sheriff - 35 units  
Ellis County Sheriff - 1 deputy  
Dallas Constable, Precinct - 1 squad

### **Dallas County Emergency Management**

Dallas County has no Standard Operating Procedures (SOP) for handling Mass Casualty Incidents (MCI). The County has plans for Mass Care and Shelter in case of natural disasters and emergency situations, which follow guidelines set by state and federal agencies. Dallas County does have a mutual aid plan for the fire department, which was enacted in 1984, but has no mutual aid plan for Emergency Medical Services (EMS). The EMS has formulated an MCI plan and has the support of all the Fire Chiefs, but it has not been adopted by all 26 cities in Dallas County nor the County of Dallas. Presently, 13 of the 26 cities in the county have signed on. Presently, the city of Dallas is not one of them.

5.

PASSENGER SEATING CHART



ICAO* INJURY LEGEND	
N	= None
M	= Minor
S	= Serious
F	= Fatal
F = FEMALE	M = MALE # = AGE
*International Civil Aviation Organization	
SAMPLE	
INJURY LEVEL	↓
AGE	↓
GENDER	↓
	F - 14 : Minor
Source: NTSB	

## **6. INTERVIEWS**

Interviews were conducted with the first Wilmer Police Officer and Dallas County Sheriff's Deputy to arrive on scene, the responding firefighters and EMTs from the Hutchins and Wilmer Fire Departments who were the first to arrive on scene to extinguish the fire, thirteen of the fourteen surviving passengers (3 had dementia and could not contribute any information), all six healthcare workers on the motorcoach, the motorcoach driver, and numerous people who pulled over to assist in removing patients from the motorcoach prior to the arrival of first responders. See Attachment #2.

Ronald A. Kaminski  
Survival Factors Group, Chairman