SURVIVAL FACTORS – HIGHWAY GROUP CHAIRMAN'S FACTUAL REPORT

Valhalla, NY

DCA15MR006

(15 pages)

NATIONAL TRANSPORTATION SAFETY BOARD
OFFICE OF HIGHWAY SAFETY
WASHINGTON, D.C.

SURVIVAL FACTORS -HIGHWAY GROUP CHAIRMAN'S FACTUAL REPORT

A. CRASH INFORMATION

Location:	Commerce Street Grade Crossing on the Metro-North Harlem Line, Valhalla, Westchester County, New York
Vehicle #1:	2011 Mercedes ML350
Vehicle #2:	Metro-North passenger train 659
Operator #2:	Metro-North Railroad
Date:	February 3, 2015
Time:	Approximately 6:26 p.m. EST
NTSB #:	**DCA15MR006**

B. SURVIVAL FACTORS GROUP

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C. CRASH SUMMARY

For a summary of the crash, refer to the *Crash Summary Report* in the docket for this investigation.

D. DETAILS OF THE SURVIVAL FACTORS INVESTIGATION

The survival factors – highway investigation collected evidence pertaining to the survival factors aspects of Vehicle 1, the emergency response, and the medical treatment and autopsy results of the victims. It also documented the passenger interviews and statements.

The survival factors aspects of the Vehicle 2 (Metro-North passenger train) are documented in the Railcar Crashworthiness Group Chairman's Factual Report, except for train passenger injury information, which is contained in this report. The Metro-North passenger train crew interviews and interviews with witnesses and the family of the SUV driver are contained in the Operations Group and the Human Performance Highway Factors Group Chairman's Factual Reports.

All supporting information is provided in the accident docket in the form of Survival Factors Attachments. The docket also contains Survival Factors Photos. A list of the attachments and photos are provided at the end of the report.

1. Vehicle 1 and Driver Information

Vehicle 1 was a 2011 Mercedes ML350 Sport Utility Vehicle (SUV) with Vehicle Identification Number (VIN) 4JGBB8GB7BAXXXXXX.[1] It was relocated from the scene to secure storage at the Metropolitan Transit Authority Police Department (MTAPD) District 7 Office in Beacon, NY. At this location it was documented with a 3-Dimensional (3D) laser scanner.[2] A preliminary inspection of the vehicle was also conducted. The vehicle was later relocated to a Metro-North facility at Bridgeport, CT, where a more complete inspection was performed. The SUV was then released to the MTAPD.

1.1. SUV Exterior Inspection

The Mercedes SUV was heavily fire damaged. The right front tire was the only significant non-metallic component visible from the exterior.[3] The right front aluminum wheel was intact and did not exhibit significant thermal damage. The wheel was an aluminum alloy material and had a rim supported by 10 spokes arranged in pairs, making 5 evenly spaced sets.

[1] The last 6 digits of the VIN have been replaced with X.
[2] Refer to the 3D Laser Scanning On-Scene Factual Report in the accident Docket.
[3] The descriptions use left and right orientations as looking forward from in the vehicle. This vehicle was driven from the left side.

The tire was intact on the wheel and was intact but exhibited some thermal damage on portions of the tread. The left front wheel was fractured, with the vehicle resting on the disk brake and hub. Three of the large spoke pairs remained and partially intact with portions of the rim. The tire was burned and the wheel exhibited thermal damage but the intact portions retained the silver color. The left rear wheel was intact but exhibited thermal damage resulting in copper, brown and black coloring. The tire was burned. The right rear wheel was fractured at an inner portion of the rim adjacent to the location where a portion of the 3rd rail protruded from the vehicle. The outer portion of the wheel was intact and thermally damaged, resulting in colors ranging from silver to copper, brown, and black.

The middle right (passenger) side of the vehicle was crushed inwards, extending the width of the front and rear door, and into the front and rear quarter panels. The entire roof was buckled upward. The right front door had a large hole, approximately 4 inches in diameter, with the exterior panel pushed inwards, located in the center of the door and at the height approximately in line with the top of the front wheel well.[4]

The metallic parts of the front of the vehicle were mostly intact, but with the right aft portion of the hood buckled upward and the left front portion of the hood buckled downward. A portion of the bumper from the center and extending left to the left (driver) side support column was missing. A section of the left A pillar was cut away, and the driver door was found with the debris separate from the car.[5] The driver door was mostly intact, apart from severe thermal damage, a fractured window frame, and deformation along the aft edge consistent with the result of first responder actions post-crash.

The left rear door had a large hole extending nearly the entire lower width of the door and extending to approximately the height of the wheel well. Protruding from the hole and resting in the rear seat portion of the vehicle and piercing the undercarriage in areas were portions of 3rd rail, brackets and other parts from the railroad tracks. Another hole was located at the floor level, apparently an entry point for a piece of 3rd rail which was lodged just inside this hole and extending through the vehicle at the floor level. Evidence of erosion consistent with electrical arcing was found at this apparent 3rd rail entry point on the left floorboard of the SUV, just forward of the left rear wheel and adjacent to the left lobe of the fuel tank.[6]

The rear hatch door was mostly intact but with deformation along the top. The right rear quarter panel and door were crushed inwards and mixed with components of railroad. One large section of 3rd rail protruded from the right rear wheel well at approximately the 10 o'clock position.

The underside of the SUV exhibited heavy crushing damage along the entire right side between axles and extending inward to about the right third of the vehicle width. Sections of railroad components had pierced the floor of the vehicle and were visible in the region of the left rear passenger floorboard and middle of the vehicle just forward of the rear axle. The 3rd rail section was between the floor and the driveshaft and exhaust, which were intact. The 3rd rail section was also between the floor and the right rear suspension support frame. Fuel tank

[4] Note the corresponding feature on the front of the train in the Railcar Crashworthiness Group Chairman's Factual Report, available in the accident docket.
[5] The vehicle roof support pillars are referred to as A, B, C, from the forward, middle, and aft respectively.
[6] Refer to the Fire Group Factual Report, available in the accident docket.

brackets were visible under the left and right rear floorboards, but no evidence of the non-metallic tank was found.

1.2. SUV Interior Inspection

1.2.1. Driver Area and Front Passenger Compartment of SUV

The driver seat and driver area was inspected. The seat and its mounting brackets to the floor were intact, and most non-metallic material was burned away, except for some foam and seat covering on the seat pan. The metallic portions of the seatbelt buckle were located on the right side of the seat, and no seatbelt connector tongue was found. The seatbelt D-ring and inertia reel were located on the left side of the seat, and the seatbelt connector tongue was also not found at this location. The driver seat headrest frame was retracted into the seat. The driver airbag module inflator was found on the seat-pan. Portions of the seat frame were cut away using a welding torch in order to gain access to the debris under the seat. The debris was inspected, but the seat belt connector tongue was not found.

The area in front of the driver seat was inspected. The steering column was found without the steering wheel and resting on the left side of the driver foot well. The steering wheel was found in the debris pile separate from the SUV, and the rim was not significantly deformed. The dash board support cross member was found forward of the front seats and bent at a 90 degree angle approximately at the center. A boot (footwear) was found in the debris of the driver foot well. The passenger airbag inflator was found just forward and to the right of the driver seat in the center of the SUV. The right front seat was displaced onto the front center column.

1.2.2. Rear Passenger Compartment and Cargo Compartment

The rear seating area of the SUV contained sections of 3rd rail, brackets, bolts, insulation, power bands, sections of black plastic and other rail debris. Fuel tank brackets were also visible under the left and right rear floorboards, but no evidence of the non-metallic fuel tank was found. A portion of the right rear quarter panel, a portion of the right rear tire steel belts, and the right rear door were found in the right rear seating area. The right rear seat headrest support bar was deformed forward. The left rear seat headrest frame was fully retracted into the seat. The left side driver seat airbag inflator was found on the floor on the left side of the SUV and the left side curtain airbag inflator and right rear seat side airbag inflator were retained in the mounting brackets above the left doors. No attempt was made to locate the right side and curtain airbag components.

2. Occupant Information

The SUV was occupied by the driver and the train was occupied by 2 crew members and approximately 650 passengers. The NTSB evaluated injuries among train occupants transported by Emergency Medical Services (EMS) and those pronounced dead on scene. Based on available evidence, a summary of the injury severity among these individuals is provided in Table 1, followed by more detailed injury descriptions in Sections 2.1 and 2.2. All the train fatalities and all of the injured persons transported from the scene by EMS were riding in the first car. Based on crew interviews, there were approximately 20 passengers riding in that car.

Metro-North is required by federal regulation to provide the Federal Rail Administration (FRA) with any reports of injuries. As of August 13, 2015, 57 injury reports had been made to Metro-North as a result of this accident.

Table 1: Occupant Injury Summary[7]

	Uninjured	Minor	Serious	Fatal
2011 Mercedes ML350 Driver	0	0	0	1
Metro-North Train 659 Crew	1	1	0	0
Metro-North Train 659 Passengers	~630	3	6	5
Total	**~630**	**4**	**6**	**6**

Of note, 13 persons were transported by EMS. However, no records could be obtained for one person transported to the hospital and two others were transported but not diagnosed with an injury. These three people were counted as uninjured in the table above.

2.1. 2011 Mercedes ML 350 Driver

The SUV was occupied by the driver, a 49 year old female. She was pronounced deceased on the scene and was transported to the Westchester County Office of the Medical Examiner located at the Westchester County Department of Laboratories and Research, Valhalla, NY. The cause of death was certified according to case M2015-0297 as: "blunt force trauma with fractures of ribs and clavicle; contusions of lung; laceration of liver; burns of the body."

The autopsy was obtained and a bulleted summary of the injuries is given below.

- 85% BSA burn, 2nd and 3rd degree; extensive soft tissue loss;
- Fractures, right posterior ribs; Fracture, right clavicle;
- Liver laceration, 5 inches; Splenic laceration, 2 inches;
- Hemothorax, right, 100cc; Pericardial blood, 60 cc;
- Pulmonary contusion, right

  Notes: Airways without soot. Carbon Monoxide less than 5%

[7] The NTSB classifies serious injuries as any injury which: (1) Requires hospitalization for more than 48 hours, commencing within 7 days from the date of 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, muscle, or tendon damage; (4) involves any internal organ; or (5) involves second- or third-degree burns, or any burns affecting more than 5 percent of the body surface. (Title 49 CFR Section 830.2)

2.2. Metro-North Train 659 Occupants

2.2.1. Crew

The train was occupied by 2 crew members consisting of an engineer and a conductor. The engineer was a 32 year old male, and he was transported to Westchester Medical Center. He was treated for pain to the right shoulder and smoke inhalation. He was admitted and released in the morning. The engineer suffered minor injury. The conductor was a 57 year old male. The conductor was not injured.

2.2.2. Passengers

2.2.2.1. Fatalities

Five train passengers were fatally injured, pronounced deceased at the scene, and transported to the Westchester County Office of the Medical Examiner located at the Westchester County Department of Laboratories and Research, Valhalla, NY. The cause of death was blunt force trauma and burns to the body for all fatalities. The autopsy results were summarized and given in the table below.

Table 2: Summary of Autopsy Results

Ref. No.	Age	Gender	Severity	Injuries
F2	36	Male	Fatal	Extensive body surface burns; Fracture, right mid-femur; Traumatic amputation mid right calf; Fracture, distal tibia; Fracture, left forearm; Hemothorax, left, 1200 cc; Hemothorax, right, 500cc; Transection, aortic arch; Pulmonary contusion, right; Dislocation, pubic symphysis Notes: Larynx without soot. Carbon monoxide less than 5%.
F3	69	Male	Fatal	Extensive body surface burns, 2nd and 3rd degree; Laceration, forehead, 1.5 inches Notes: Trachea without soot or thermal injury. Carbon monoxide less than 5%.
F4	42	Male	Fatal	Extensive body surface burns, 2nd and 3rd degree; Laceration, central forehead, 2x1 inch; Comminuted fractures, left posterior ribs; Fracture, left clavicle; Fractures, six, cervical spine; Fractures, 2, thoracic spine; Epidural hemorrhage, cervical spine; Epidural hemorrhage, thoracic spine; Subdural hemorrhage, cervical spine; Subdural hemorrhage, thoracic spine; Pulmonary contusions, left; Hemothorax, left, 100 cc Notes: Airways without soot. Carbon monoxide less than 5%
F5	41	Male	Fatal	Multiple comminuted fractures, base of the skull; Subarachnoid hemorrhage; Multiple lacerations, base of the brain; Transection, descending aorta; Transection, inferior vena cava; Multiple lacerations, heart; Pericardial laceration; Multiple rib fractures with flail chest; Multiple extremity fractures; Extensive body surface burns Notes: Trachea without soot. Carbon monoxide less than 5%
F6	53	Male	Fatal	Liver lacerations, intraparenchymal; Splenic lacerations, (2); 3/4 and 1 inch; Laceration, right forehead, 3/4 inch; Contusion, left neck; Complete abdomino-pelvic transection with bilateral sacro-illiac separation; 75% body surface burns; 3rd and 4th degree; Fracture, right humerus; Laceration,

Ref. No.	Age	Gender	Severity	Injuries
				dorsum right hand, 1.5 x 1 inch; Fracture, right tibia, open; Fracture, right fibula, closed; Fractures, open, left tibia and fibula; Pulmonary contusion, right lower lobe; Liver lacerations, (3); 1-3 inches Notes: Airway is free of soot. Carbon monoxide less than 5%.

2.2.2.2. Serious Injuries

A total of 6 passengers were found to have suffered serious injuries. The injuries included blunt trauma such as fractures and lacerations and burn injuries. The table below provides the age, gender, and a description of the injuries for the seriously injured passengers.

Table 3: Summary of Serious Injuries

Ref. No.	Age	Gender	Severity	Injuries
S1	67	Male	Serious	Fracture, left 3rd finger, proximal phalanx, comminuted, open; Laceration, left scalp, 6 cm Notes: Admitted for about 41 hours, finger fracture required surgery; hence, not "simple fracture of finger"
S2	43	Male	Serious	Abrasion, right knee and shin; Dislocation, patella, right Notes: Admitted for less than 24 hours
S3	29	Male	Serious	2% total body surface area burns to bilateral hands and forehead, partial thickness; Right ankle pain Notes: Admitted for 8 days
S4	47	Male	Serious	Fracture, tibial plateau, left
S5	65	Male	Serious	10% body surface area burn to back and buttock, partial to full thickness; Fracture, comminuted, right clavicle; Scalp hemtoma, right posterior; Fracture, right 1st rib, anterior; Fractures, left 1st rib, anterior and posterior; Abrasion, anterior left chest wall
S6	51	Male	Serious	Fracture, left tibia, spiral, comminuted, open; Laceration, posterior left proximal thigh; Laceration, left shin, 30 cm; Tear, medial meniscus, right knee; Sprain, medial collateral ligament, right knee; Sprain, lateral collateral ligament, right knee; Sprain, popliteus tendon, right

2.2.2.3. Minor Injuries, No Injuries, and Unknown Injuries

A total of 3 passengers were found to have suffered minor injuries. The table 4 provides the age, gender, and a description of the injuries for the passengers with minor injuries.

Table 4: Summary of Minor Injuries

Ref. No.	Age	Gender	Severity	Injuries
M1	47	Female	Minor	Abrasion, right knee, 1cm; Right rib pain; Low back pain
M2	51	Male	Minor	Multiple abrasions, bilateral shins
M3	61	Male	Minor	Abrasion right shin, 1cm Notes: Injured while exiting the window exit

3. Law Enforcement Information

3.1. Location, Jurisdiction, and Primary Services

The accident occurred in Westchester County New York on the Metro-North rail line between the Valhalla New York train station to the south and the Hawthorne New York train station to the north. Valhalla and Hawthorne are hamlets of the town of Mt. Pleasant. Pleasantville is a 1.8 square mile independently incorporated town that is within the borders of Mt. Pleasant, and has its own independent police department. The MTAPD supersedes local police authority in areas of MTA operations, and MTAPD has jurisdiction throughout all New York counties that have MTA operations.

The primary law enforcement agency was the MTAPD; primary fire/rescue was Valhalla Volunteer Fire Department (VVFD), and primary Emergency Medical Service was Valhalla Volunteer Ambulance Corps (VVAC). The nearest level 1 trauma center was Westchester Medical Center located in Valhalla NY, just a few miles from the accident site.

Landline 911 calls are routed to the local police agency Public Service Answering Points (PSAP). If the fire or EMS agency is dispatched by Westchester County Department of Emergency Services (DES) Emergency Communications Center (ECC), the call is then transferred to the ECC as a secondary PSAP for the additional dispatch. Cell phone 911 calls are routed to the New York State Police Traffic Management Center (TMC) in Hawthorne (depending on the location of the cell phone tower that picked up the call.)

The MTAPD is dispatched from the MTAPD Operations and Communications Dispatch Center in Long Island City, Queens, New York. VVFD is dispatched by Westchester County DES. VVAC is typically dispatched by the Mount Pleasant Police Department (MPPD) but can be toned out by Westchester County DES. Mutual aid for this region is coordinated by DES in Valhalla NY.

3.2. Westchester County

3.2.1. Emergency Operations and Dispatch

Westchester County DES supports fire and EMS services and facilitates mutual aid assistance. Information about the planning and organizational structure for emergency response operations was obtained:

- The Westchester County Emergency Medical Services Mutual Aid Plan;[8]
- A list of the emergency services apparatus;[9]
- The Westchester County Fire Mutual Aid Plan was posted on the website.[10]

The Westchester County DES gets notifications and monitors incidents from the various agencies within the county. Prior to the train crash, the Westchester County DES was notified of a head on motor vehicle accident (MVA) that caused traffic to back up on Lakeview Avenue. The MVA occurred at the intersection of the Taconic State Parkway (TSP) and Lakeview Avenue. The Westchester DES provided dispatch services for the MVA as the dispatch agency for VVFD. Mount Pleasant Police Department (MPPD) was the dispatch agency for the VVAC. Incident logs for both the MVA and the train crash were obtained from the Westchester DES ECC as extracted from the Computer Aided Dispatch (CAD) system.

The MVA emergency call was logged in at 5:29:52 p.m., the first units were dispatched at 5:30:26 p.m., arrived at 5:37:17 p.m., and the call was closed at 7:43:24 p.m.[11] The MVA dispatch log provided information about the resources that were deployed and in use at the time of the train crash. The log also provided the times that the units became available.

The Metro-North collision with the SUV call was logged at 6:28:08 p.m., the first units were dispatched at 6:28:25 p.m., arrived at 6:34:24 p.m. and the call was closed at 5:23:13 a.m. on February 4, 2015.[12] The log provided the event chronology for all Westchester County services as well as notes for actions on scene such as resource needs, hospital availability and patient transport communications, and scene safety communications.

The NTSB met with management of the Westchester County DES, notes from the meetings and interviews were created.[13] During the aftermath of the crash, under direction of the incident command, Westchester County DES Emergency Management created a task force to establish and implement a disaster family assistance plan while on scene and continued efforts in the days following the accident. A framework had not been previously established and the task force reached out and obtained assistance from other areas in the state. There was an interagency briefing at 11:00 a.m. on February 4, 2015, that included a discussion of what information was known about the actions to support the families of the deceased. The NTSB attended the briefing. The MTAPD had interviewed 5 families on the night of the crash, but this information wasn't known to other agencies at the time of the interagency briefing. The names of the families with missing loved ones, the number and status of people in the hospital, and identities of the injured were still unknown. There was a discussion about the actions that should be taken by the MTAPD or Metro-North to establish contact points for the victims and their families.

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[8] Attachment 1: Westchester County Emergency Medical Services Mutual Aid Plan.
[9] SF Attachment 2: Westchester County Apparatus Plate Assignments.
[10] The EMS Mutual Aid Plan is in the Westchester County SF Highway folder, and the Fire Mutual Aid Plan is accessible at:
http://emergencyservices.westchestergov.com/images/stories/pdfs/FireMutualAidPlanAdopted12%2019%202012FINAL.pdf
[11] SF Attachment 3: Westchester DEC Incident Detail Report for previous MVA.
[12] SF Attachment 4: Westchester DES Incident Detail Report.
[13] SF Attachment 5: Westchester County, EMS and Hospital Responder Interviews.

On February 9, 2015, Metro-North informed the NTSB that the following message was posted on the commuter trains on the affected train line.

> **A Message to Our Customers**
>
> The collision between a Metro-North train and an SUV near Valhalla last Tuesday night is a terrible tragedy that has resulted in the worst loss of life in this railroad's history.
>
> All of our employees and the entire MTA family are tremendously saddened by this horrible accident, and our thoughts and prayers go out to the relatives and loved ones of the victims and those injured.
>
> For customers who were on the train involved in the accident, please call MTA Police at (718) 361-2402 for information on counseling services. Please call Metro-North Customer Information Center at 511 (in CT, call 877-690-5114) and request a representative for general assistance, including help with lost items.
>
> Thank you

3.3. Law Enforcement

3.3.1. Metropolitan Transit Authority Police Department (MTAPD)

The MTAPD had primary jurisdiction and responded and secured the scene. The New York State Department of Motor Vehicles Police Accident Report was obtained.[14] Information was also obtained by interviewing MTAPD officers who responded.[15] The investigation revealed a grade crossing accident at the Commerce Street crossing in 1984. The MTAPD provided a witness statement from this accident.[16]

The MTAPD provided a description of their dispatch services as follows:[17]

> MTAPD dispatch is done by the Operations/Communications Unit of the Division of Emergency Operations. It functions much like a PSAP for a local community, except that it receives no E911 calls or associated data. It does receive emergency calls from the public through the MTA published contact number, but most calls are received from MTA employees. The dispatch structure includes three dispatch–related positions and Operations Supervisors, who are sworn staff - Sergeants.
>
> Call-Takers receive calls and enter call information into a CAD system. Calls are routed to the radio dispatchers, which are divided into 2 regions, North for all calls in the MTA Metro-North territory and East for all calls in the MTA Long Island Rail Road or Staten Island Railway regions. Radio Dispatchers utilize both VHF simplex, repeatered (Sic) and trunked radio to dispatch units and receive updates and requests for assistance.
>
> Operations Supervisors provide supervisory control of all calls for service, manage the personnel and EOC, and perform all duties and responsibilities of and Operations Unit, by managing the department-wide resources and

[14] SF Attachment 6: MTAPD Police Accident Report.
[15] SF Attachment 7: Law Enforcement and Fire Responder Interviews.
[16] SF Attachment 8: Witness Statement October 1984.
[17] http://web.mta.info.

providing notifications to internal staff to include MTA and MTA Agency executives and outside public safety partners. Additionally they monitor interoperable radio and telecommunications resources to coordinate mutual aid and emergency response requests. Dispatch Personnel work five tours that are 7 hour and 30 minutes in length, with starting times at 8:00 a.m., 4:00 p.m., and midnight. Sergeants work three 12 hour and 20 minute tours with start times of 6:30 a.m. and 6:30 p.m. The center receives an average daily CAD call volume of 475 calls for service.

The MTAPD Incident Detail Report was received.[18] It initiated the call log at 6:28:11 p.m. Officers were dispatched starting at 6:32:36 p.m. and first on-scene at 6:38:22 p.m. A total of 23 officers were assigned to the call from the time of the accident until nearly midnight. An additional 7 were assigned between 11:57 p.m. and 3:26 p.m. the following day.

3.3.2. Mt. Pleasant Police Department

The Mount Pleasant Police Department (MPPD) responded to the Metro-North train crash and also assisted the New York State Police with the highway accident at the intersection of Lakeview Avenue and the Taconic State Parkway which had preceded the Metro-North crash. The MPPD Chief informed NTSB investigators that the previous accident was a two vehicle accident with a subject entrapped in one of the vehicles. He noted that the southbound Taconic State Parkway was blocked by a fire truck, road flares, and police vehicles. Traffic was diverted onto Lakeview Avenue west of the TSP. He noted that the MPPD was involved with traffic control and had an officer stationed adjacent to the cemetery office driveway on Lakeview Avenue, and this officer was preventing traffic from proceeding further east on Lakeview Avenue when the Metro-North crash occurred.

The MPPD provided an incident log and officer narrative reports for the train crash.[19] The MPPD log was created at 6:27:06 p.m., the first unit was enroute at 6:27:55 p.m., and the first report from a unit on scene was at 6:30:06 p.m.

3.3.3. Other Law Enforcement Agencies

The New York City Police Department (NYPD) and the New York State Police arrived on scene and asked if any help was needed. They did not have a significant role in the response. The NYPD Joint Terrorism Task Force arrived and determined that there was not a concern of intentional actions. The Greenburgh Police Department provided All Terrain Vehicles (ATV's) to assist in the response.

3.4. Westchester County Medical Examiner's Office

Meetings with the ME confirmed that there were 6 fatalities, one woman in the SUV and 5 passengers who were in the first train car. Review of scene photos and diagrams indicated that the majority of the fatalities in the train car were found on the left side of the train car and distributed throughout the length of the first car.

[18] SF Attachment 9: MTAPD Incident History Detail.
[19] SF Attachment 10: Mt. Pleasant PD Information.

4. Fire and EMS Information

4.1. Valhalla Volunteer Fire Department

The Valhalla Volunteer Fire Department (VVFD) responded and the Chief assumed Incident Command (IC). He set up a command post on the Taconic Parkway adjacent to the forward part of the train. An EMS triage area was located at the location of the Commerce Street crossing. A mass casualty and mutual aid response was established. Both lanes of the Taconic Parkway were closed and firefighting operations were staged from the parkway. Interviews were conducted with the IC as well as several other fire chiefs and captains involved in the response.[20]

4.2. Valhalla Volunteer Ambulance Corps

The Valhalla Volunteer Ambulance Corps (VVAC) responded and a Lieutenant was designated as the medical group supervisor (EMS IC). The triage command post was set up at the Commerce Street crossing, and patients were transported south along the track to this location to be packaged and loaded into ambulances and transported. The EMS IC was interviewed as well as one of the other EMS responding personnel.[21] The VVAC provided preliminary notes from the event.[22]

4.3. Other Mutual Aid Fire and EMS Agencies

The Metro-North Railroad Fire Brigade did not respond to this event, but an MTA Fire Chief was near the crash when it occurred, assumed the role of a responder, and was one of the first responders on scene. He was interviewed by the NTSB.[23] Various agencies were used for mutual aid and to provide standby coverage, and the Westchester County DES provided incident reports for these activities.[24]

5. Hospital Information

Westchester Medical Center (WMC) was the nearest level 1 trauma center and received the majority of the patients. WMC provided their Mass Casualty Incident Response Plan.[25] The NTSB met with the Westchester Medical Center (WMC) Emergency Operations staff as well as the Westchester County Office of Emergency Response on February 6th 2015.[26] The WMC provided contact information for patients still admitted. The NTSB met with the Director of the Emergency Department, the Chief Trauma Surgeon, and the Chief Nurse. They expressed some confusion about the initial response and communication. Another meeting with the head of the hospital's emergency operations center also revealed some frustration with information provided to the victim's families. He noted that there were reports that the phone number provided to the victim's families was a voice message with no option to leave a message. He also noted that

[20] SF Attachment 7: Law Enforcement and Fire Responder Interviews.
[21] SF Attachment 5: Westchester County, EMS and Hospital Responder Interviews.
[22] SF Attachment 11: Valhalla Ambulance Corps Notes.
[23] SF Attachment 6: Law Enforcement and Fire Responder Interviews.
[24] SF Attachment 12: Westchester DES Reports of Mutual Aid.
[25] SF Attachment 13: Westchester Medical Center Mass Casualty Incident Response Plan.
[26] Complete notes from staff interviews are contained in SF Attachment 5: Westchester County, EMS and Hospital Responder Interviews

information about the surviving injured patients had been provided by WMC to MTAPD on the night of the crash.

6. Information From Interviews and Statements

6.1. Train Passengers

Information about the crash and passenger experience was obtained through personal and telephone interviews, written statements, and questionnaires distributed and returned by some passengers.[27] Information was obtained from the train crew and other witnesses.[28]

The seating positions for some of the passengers were identified through the interviews and statements. Figure 1 provides the layout of the first train car, and is followed by an estimate of the seating locations for the 12 first car passengers interviewed.

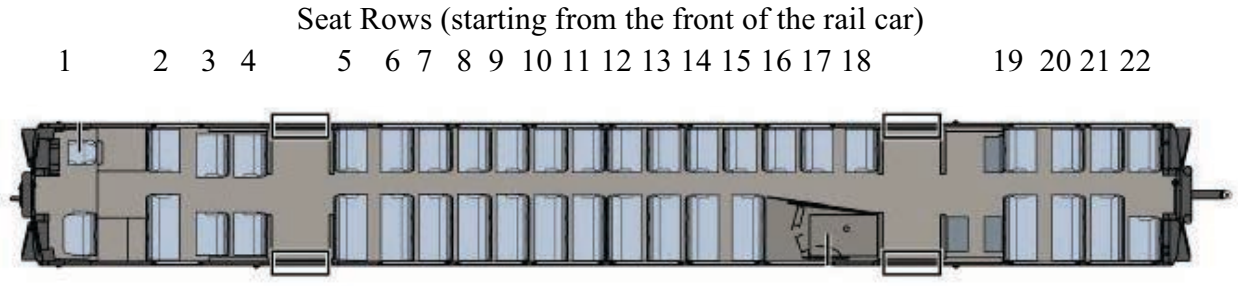

Figure 1. First Train Car Layout

Train car 1 passenger 1: left side, window seat, forward facing, row 9
Train car 1 passenger 2: left side, window seat, forward facing, last row (21)
Train car 1 passenger 3: right side, window seat, forward facing, row 10
Train car 1 passenger 4: right side, window seat, forward facing, row 19
Train car 1 passenger 5: left side, aisle seat, aft facing, row 2
Train car 1 passenger 6: right side, window seat, forward facing, row 6 or 7
Train car 1 passenger 7: right side, aisle seat, second to last row (20)
Train car 1 passenger 8: left side, middle seat, aft facing, row 13
Train car 1 passenger 9: left side, aisle seat, forward facing, row 20
Train car 1 passenger 10: left side, aisle seat, middle of car
Train car 1 passenger 11: right side, window seat, forward facing, row 8 or 9
Train car 1 passenger 12: right side, window seat, aft facing, row 11 or 12

[27] SF Highway Attachment 14: Passenger Interviews and Statements.
[28] Refer to the Human Performance Group Chairman's Factual Report, available in the accident docket.

6.2. First Responder Interviews

Information was obtained from interviews conducted with fire department, EMS, and Hospital first responders. Complete notes from these interviews are contained in the Survival Factors-Highway Attachments referenced below.

E. DOCKET MATERIAL

The following attachments and photographs are included in the docket for this investigation:

LIST OF ATTACHMENTS

Survival Factors Attachment 1 -	Westchester County EMS Mutual Aid Plan
Survival Factors Attachment 2 -	Westchester County Apparatus Plate Assignments
Survival Factors Attachment 3 -	Westchester DES Incident Report for Previous MVA
Survival Factors Attachment 4 -	Westchester DES Incident Detail Report
Survival Factors Attachment 5 -	Westchester County, EMS and Hospital Responder Interviews
Survival Factors Attachment 6-	MTA Police Accident Report
Survival Factors Attachment 7 -	Law Enforcement and Fire Responder Interviews
Survival Factors Attachment 8 -	Witness Statement October 1984
Survival Factors Attachment 9 -	MTAPD Incident Detail History
Survival Factors Attachment 10 -	Mt. Pleasant PD Information
Survival Factors Attachment 11 -	Valhalla Ambulance Corps Notes
Survival Factors Attachment 12 -	Westchester DES Reports of Mutual Aid
Survival Factors Attachment 13 -	Westchester Medical Center Mass Casualty Incident Response Plan
Survival Factors Attachment 14 -	Passenger Interviews and Statements

LIST OF PHOTOGRAPHS

Survival Factors Photo 1 -	SUV right side overall
Survival Factors Photo 2 -	SUV right side detail
Survival Factors Photo 3 -	SUV left side overall
Survival Factors Photo 4 -	SUV left side detail
Survival Factors Photo 5 -	SUV driver seatbelt buckle
Survival Factors Photo 6 -	SUV left front view
Survival Factors Photo 7 -	SUV right rear view

END OF REPORT

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