



**SURVIVAL FACTORS – HIGHWAY GROUP CHAIRMAN’S  
FACTUAL REPORT**

**Train & Truck Crash  
On Railroad Right-Of-Way**

**Oxnard, California**

**HWY15MH006**

(13 pages)

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

**SURVIVAL FACTORS GROUP CHAIRMAN'S  
FACTUAL REPORT**

---

**A. CRASH INFORMATION**

Location: Oxnard, Ventura County, California  
Vehicle #1: 2005 Ford F450 Pick-up towing a 2000 Tandem Axle Utility Trailer  
Operator #1: Harvest Management LLC  
Vehicle #2: Metrolink Commuter Train #102  
Operator #2: Metrolink Railroad  
Vehicle #3: 1998 Toyota Camry  
Date: February 24, 2015  
Time: Approximately 5:44 a.m. PST  
NTSB #: **HWY15MH006**

**B. SURVIVAL FACTORS GROUP**

Thomas Barth  
Survival Factors Group Chairman  
NTSB Office of Highway Safety  
Denver Regional Office, Suite 500  
4760 Oakland St, Denver CO 80239

Rafael Marshall, Project Manager  
NTSB Office of Highway Safety  
490 L'Enfant Plaza SW  
Washington, D.C. 20594

Fred Jackson, Director, Safety and Security  
Metrolink Railroad  
Southern CA Regional Rail Authority  
2704 North Garey Ave  
Pomona, CA 91767

Richard Downs  
Crashworthiness Group Chairman  
NTSB Office of Rail, Pipeline  
and Hazardous Materials Investigations  
490 L'Enfant Plaza SW  
Washington, D.C. 20594

Brian Woolley, Sergeant, Traffic Unit  
Oxnard Police Department  
251 South C Street  
Oxnard, CA 93030

Kari Jacobsen, Mechanical Engineer  
Structures and Dynamics Division, V-333  
Volpe Center  
US Department of Transportation  
55 Broadway, Cambridge, MA 02142

Michael Lange, Passenger Railroad Safety Specialist  
Federal Railroad Administration (FRA)  
US Department of Transportation  
3401 Centrelake Drive, Suite 480  
Ontario, CA 91761

## **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 3, the emergency response, and the medical treatment and of the victims. It also documented the passenger interviews and statements.

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**

The 2005 Ford F450 and 2000 tandem axle utility trailer were transported and placed in secure storage at a Metrolink facility in Moorpark California. The truck and trailer were documented and inspected by the NTSB investigation Vehicle Group.<sup>1</sup> The truck and trailer were also documented using a 3-Dimensional laser scanner.<sup>2</sup>

### **2. Vehicle 2 Information**

The Metrolink commuter train #102 was moved and placed in secure storage at a Metrolink facility in Moorpark California. The vehicle was documented and inspected by the NTSB investigation Crashworthiness Group.<sup>3</sup> The train cars and scene were scanned using a 3-Dimensional laser scanner.<sup>4</sup>

---

<sup>1</sup> Refer to the Vehicle Factors Group Chairman's Factual Report.

<sup>2</sup> Refer to the Scanning Group Chairman's Factual Report.

<sup>3</sup> Refer to the Crashworthiness Group Chairman's Factual Report.

<sup>4</sup> Refer to the Scanning Group Chairman's Factual Report.

### 3. Vehicle 3 Information

The 1998 Toyota Camry was positioned in the middle of the Fifth Street and Rice Avenue intersection and facing North at the time of the collision. Debris flying from the collision caused minor damage to the car. The driver remained in his car until responders arrived. The vehicle was photographed by the Oxnard Police Department (OPD), and the driver and Toyota were released from the scene.

Documentation of the 1998 Toyota Camry was based on OPD photos and information.<sup>5</sup> The Toyota had Vehicle Identification Number (VIN) 4T1BG22K7WUXXXXXX.<sup>6</sup> The car appeared to have pre-existing scratches and damage which have not been described. No obvious damage from the collision was noted on the front, right side, and back of the vehicle. Damage to the left side of the car appeared to be caused by the collision. There was a round dent approximately 3 inches in diameter positioned just forward of the left rear passenger door handle, and in-line with the lower edge of the door handle. There was a round dent approximately 2 inches in diameter just aft of the left rear passenger door and forward of the fuel door. The dent was in-line with the upper edge of the door handle. The driver door window glass was shattered. There was deformation of the chrome molding at the upper and aft aspect of the driver window. A first responder noted that the driver window glass was shattered but in place when he approached the car. The glass fell out of position when the driver door was opened. The car was photographed by OPD and released to the driver.

### 4. Occupant Information

The Ford truck was occupied by the driver when it was positioned on the tracks. Although the driver left the truck prior to the collision, he is included in the occupant count for people involved. The train was occupied by 3 crew members and 51 passengers. A summary of the injury severity is provided in Table 1, followed by more detailed injury descriptions in Sections 2.1 and 2.2.

Table 1: Occupant Injury Summary<sup>7</sup>

	Uninjured	Minor	Serious	Fatal
2005 Ford F450 Driver	0	1	0	0
Metrolink Train #102 Crew	0	1	1	1
Metrolink Train #102 Passengers	21	18	12	0
1998 Toyota Camry Driver	1			
<b>Total</b>	<b>22</b>	<b>20</b>	<b>13</b>	<b>1</b>

<sup>5</sup> Based on Oxnard Police Photo IMG\_9006 through IMG\_9020.

<sup>6</sup> The last six digits of the VIN were replaced with X.

<sup>7</sup> 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)

#### **4.1. 2005 Ford F450 Pick-up Driver**

The 2005 Ford F450 was occupied by the driver, a 54 year old male. The driver exited the vehicle prior to the accident and was taken to the hospital in police custody. He reported chest pain and anxiety, and knee pain from stumbling while running from the truck. He had minor injuries.

#### **4.2. Metrolink Train #102**

##### **4.2.1. Crew**

The crew of the Metrolink commuter train consisted of an Engineer, a Student Engineer, and a Conductor.

##### Engineer

The Engineer was a 62 year old male. The engineer was extricated from the train by the Oxnard Fire Department, triaged as red (immediate) transport patient. He was placed on a backboard, placed in a cervical collar and transported from the scene by a Gold Coast Advanced Life Support (ALS) ground ambulance Unit MED441, priority red, triage tag 3852216, and with complaints of left elbow pain, chest pain, and shortness of breath. The medical procedures performed in the field included the administration of an IV and oxygen, and a cardboard splint was applied to his left elbow. He was transported to the Emergency Room (ER) at Ventura County Medical Center in Ventura, CA.

Chest x-rays taken at the ER identified multiple rib fractures with no obvious pneumothorax. The left elbow showed evidence of posterior dislocation, and it was reduced and splinted. While in the ER the engineer's condition worsened and he was intubated, treated for cardiac arrest and resuscitated from ventricular fibrillation and given various medications and a chest tube. A CT scan revealed severe primary contusions with no intra-abdominal solid organ injury and no free fluid. He was transferred to the Intensive Care Unit (ICU). Further CT scans identified bilateral clavicle fractures, fractures through the first left and posterolateral left third through sixth ribs, fractures through the anterolateral right second through eighth ribs and posterior right eleventh rib. Medical records listed his height as 5 feet 6 inches and 220 pounds. Despite intensive care, the engineer's condition continued to deteriorate and he died on March 03, 2015. The County of Los Angeles Department of the Coroner conducted a death investigation of the decedent.

##### Student Engineer

The Student Engineer was a 31 year old male, and was transported from the scene by a Gold Coast ALS ground ambulance Unit MED664 with patient priority yellow-delayed, triage tag 2097600 to St. John's Regional Medical Center in Oxnard, CA. The ER findings were: soft tissue injury overlying the right-sided jaw with subcutaneous edema and mild hematoma, mild left frontal scalp swelling without signs of other abnormalities in the head or neck, and he was diagnosed with a cervical sprain. Medical records listed his height as 68 inches cm and 293 pounds. He suffered minor injuries and was treated and released.

## Conductor

The Conductor was a 59 year old male, and was transported from the scene by a Gold Coast ALS ambulance to Los Robles Regional Medical Center Thousand Oaks, CA. The ER noted that the patient was brought in and classified as a code green tier 2 trauma patient activated at 07:17 am. The paramedics noted that the patient complained of back and neck pain, and may have lost consciousness. CT scans revealed acute fractures of the spinous processes of T6, T7, and T8 vertebra and acute fractures of the right transverse processes of L1, L2, and L3 vertebra. Patient was discharged at 9:57 am with agreement to do outpatient care. He suffered serious injuries.

### **4.2.2. Passengers**

There were a total of 24 passengers transported from the scene to 5 area hospitals. Two additional patients transported themselves to the hospital within a day of the accident. A total of 11 suffered serious injuries, as described in section 4.2.2.2. A total of 19 passengers suffered minor injuries, as described in section 4.2.2.3, and 20 were treated and released.

#### **4.2.2.1. Fatalities**

None of the passengers on the train sustained fatal injuries.

#### **4.2.2.2. Serious Injuries**

A total of 12 passengers were found to have suffered serious injuries. The table below provides the age, gender, and a description of the injuries for the seriously injured passengers.

Table 2: Passengers with Serious Injuries

No.	Age	Gender	Height (inches)	Severity	Injuries	Notes
S1	42	Female	66	Serious	Two horizontal fractures involving the S3 and S4 segments of the sacrum; tiny presacral hematoma	Patient stated she was on upper level, does not know what body hit
S2	65	Female	69	Serious	Closed fracture of the thoracic vertebra T4 and T5; bilateral clavicle fractures; left apical pulmonary contusion	Patient stated she was on the lower level, facing forward, and was thrown about in cabin. She waited for evacuation
S3	61	Male	72	Serious	Closed fracture of vault of skull with cerebral laceration and contusion; traumatic intercranial hemorrhage; closed fracture of the sacrum and coccyx; closed fracture of the pubis; closed fracture of left ischium; closed fracture of the malar, maxillary and otherfacial bones; closed fracture of the nasal bones; left	Patient remembers falling and hitting his head, does not believe he lost consciousness, but is not certain.

No.	Age	Gender	Height (inches)	Severity	Injuries	Notes
					superior and inferior rami fracture	
S4	36	Female	66	Serious	Forehead laceration; left clavicle fracture; bilateral rib fractures, left and right first ribs; vertebra fractures C7 - T1; disc bulge at C5-C6 with cervical stenosis and left paraesthesias; right Zygomatic arch fracture; spine ligamentus injury; left distal clavical fracture; right forehead laceration	Patient remembered event and did not lose consciousness
S5	41	Female	66	Serious	Left fibula fracture; contusion of lower left abdomen	
S6	57	Male	73	Serious	nondisplaced fracture of thoracic vertebra C7; left head pain; contusion of chest wall; right shoulder sprain; contusion of left lower leg	Patient remembers hitting the left side of his head, did not lose consciousness. Interviewed, No. 7
S7	44	Female	62	Serious	left clavicle fracture; left rib fractures, ribs 1, 2, 3, 4, 6, 7; thoracic spine pain; upper left abdominal pain	
S8	52	Female	64	Serious	lumbar fracture L1; thoracic fracture T12; left hip contusion; head injury, not specified	
S9	62	Male	70	Serious	closed fracture of C5, C6, C7; closed fracture of lumbar spine with spinal cord injury; right scapula fracture; abrasions and contusions left leg	
S10	35	Female	70	Serious	left fibula fracture; tailbone contusion	
S11	63	Female	65	Serious	thoracic vertebra fracture, C12; left knee pain	Interviewed, No. 8
S12	62	Male	73	Minor	dislocated left elbow, rib and back contusions	Interviewed, No.9

#### 4.2.2.3. Minor Injuries, No Injuries, and Unknown Injuries

A total of 19 passengers sought medical attention from the scene and suffered minor injuries. The table below provides the age, gender, and a description of the injuries for the passengers with minor injuries.

Table 3: Passengers with Minor Injuries

No.	Ref. No.	Age	Gender	Height (inches)	Severity	Injuries	
M1	2	25	Female	60	Minor	Contusion left upper leg and thigh; back pain; pelvic pain near left iliac crest	Patient stated she was thrown into seat in front of her
M2	3	45	Male	69	Minor	Mild left upper chest tenderness; lower back strain; chest contusions	Patient stated he hit left side of head on window and chest on seat in front of him, seated in 5th car
M3	4	31		68	Minor	Right side jaw edema and mild hematoma; neck pain, cervical sprain; mild left frontal swelling of scalp; chin laceration 1 cm,	Patient stated he hit his head and right side of jaw on a pole, was thrown from seat to the floor, BMI 44.96
M4	5	19	Male	67	Minor	Abrasions; cervical strain; contusion of the hip; lumbar strain	Patient stated he was on upper level, tumbled within car and fell down the stairs to the first floor.
M5	6	65	Male	74	Minor	Sprain of neck; joint pain – pelvis; joint pain - left leg; joint pain shoulder; pain in limb; backache nos	Patient stated the car turned over and he bounced around
M6	7	57	Female	66	Minor	back pain; cervical sprain	Patient stated she thrown from seat to floor. She was seated on top level and lodged forward into side window.
M7	8	19	Female	64	Minor	lumbar sprain	
M8	9	53	Male	72	Minor	right shoulder pain; right mid abdominal pain; lumbar pain	
M9	10	69	Male	72	Minor	left shoulder pain; cervical strain; left groin muscle strain	Patient stated he was on the lower level and fell, landing on his left side.
M10	13	45	Female	64	Minor	right shoulder pain; left head pain	Patient stated she hit the left side of her head on the window
M11	14	27	Male	63	Minor	contusion of face, left scalp, and neck; contusion of left hip	
M12	15	46	Female	63	Minor	dislocation of right thumb; right shoulder pain; right wrist pain	
M13	19	39	Male	64	Minor	neck pain and soft tissue injury	
M15	25	54	Male	68	Minor	lumbar strain; back pain	Interviewed, No.6
M16	26	67	Male	67	Minor	chest contusion, left; left	Patient stated he hit a



No.	Ref. No.	Age	Gender	Height (inches)	Severity	Injuries	
						chin laceration, 2 cm, sutured	metal pole
M17	NA	57	Male		Minor	Knee pain	Interview No. 3
M18	NA	58	Male		Minor	Elbow contusion, minor concussion	Interview No. 4
M19	NA	50	Male		Minor	Arm contusions, left foot abrasions	Interview No. 5 Patient stated the arm bruises were from the railing, and the foot abrasions were from the seat frame.

There were approximately 21 passengers who were not injured or did not seek medical attention.

#### **4.3. 1998 Toyota Camry Driver**

The 1998 Toyota was occupied by a 73 year old male driver who was not injured in the accident.

### **5. Jurisdiction and Oversight Agencies**

#### **5.1. Location, and Primary Services**

The accident occurred in Oxnard, Ventura County California on Union Pacific track at the grade crossing near the intersection of SR-34 (Fifth Street) and Rice Avenue. The Oxnard Police Department and Oxnard Fire Department had primary jurisdiction in this area. The EMS services were provided by Gold Coast in this sector with oversight from the Ventura County Public Health, a division of the Ventura County Health Care Agency.

This incident was elevated to a level 3 Mass Casualty Incident (MCI) with a unified command structure, and mutual aid was provided by various agencies as noted in the following sections. The Oxnard PD and Oxnard FD are dispatched by the city of Oxnard, and the other services were dispatched by Ventura County, or in some cases by their specific agency system.

#### **5.2. Federal, State, and Oversight Agencies**

Several agencies responded and supported various aspects of the response and investigation, including the Federal Bureau of Investigation Los Angeles Field Office, the Federal Railroad Administration, State of California Natural Resources Agency Department of Fish and Wildlife Office of Spill Prevention and Response, the State of California Department of Fish and Game, The California Governor's Office of Emergency Services, the County of Ventura Public Works Agency, and the Ventura County Watershed Protection District. The California Highway Patrol and the State of California Department of Transportation, District 7 provided technical services on scene and during the investigation.

## **5.3. Law Enforcement**

### **5.3.1. Oxnard Police Department (OPD)**

The Oxnard PD responded and secured the scene. The preliminary OPD Traffic Collision Report and the OPD Call for Service Detail Report CFS 163 (dispatch logs) as well as photographs and video data from the scene were obtained.<sup>8</sup> The dispatch center created the call log at 5:44:18 a.m. and the first group of police, fire, and EMS units were all dispatched by 5:45:30 a.m. The OPD made an initial attempt to notify the railroad at 5:47:32. Metro-Link was successfully notified at 5:51:02 a.m. The initial Incident Commander (IC), (Battalion Chief 61) was identified at 5:51:53 a.m.

The OPD also provided an injured passenger report that contained preliminary information about the passengers and injuries, and contained some statements given to police.<sup>9</sup>

### **5.3.2. Other Law Enforcement Agencies**

Several other law enforcement agencies provided mutual aid. The CHP provided aerial photographs. The Los Angeles County Sherriff's Department was under contract to provide security for Metrolink Railroad and provided their incident report.<sup>10</sup> The Union Pacific Railroad Police Department was also present.

## **6. Fire and EMS Information**

### **6.1. Oxnard Fire Department (OFD)**

The Oxnard Fire Department responded and the Battalion Chief assumed Incident Command (IC). He called a level 3 MCI and set up a unified command structure. OFD Incident Detail Report was obtained, which provided dispatch logs for the crash.<sup>11</sup> The OFD on-scene incident command notes were also provided.<sup>12</sup> After the event, the OFD created and provided a report in the National Fire Incident Reporting System (NFIRS) format.<sup>13</sup>

The OFD dispatch logs identified that the dispatch time was 5:44:47 and the first engine was enroute at 5:46:24 a.m. and arrived at 5:50:22 a.m. The Battalion Chief (IC) arrived at 5:54:02 a.m. The OFD set up a unified command structure with a Multi-Casualty Field Worksheet on-scene that included incident objectives, tactical support and safety plans, triage organization and a command structure flowchart with rosters and organizational assignments.

The Ventura County Fire Department provided mutual aid. Several interviews were conducted with fire crews as outlined in Section 8 of this report. The fire crew interviews provided an account of the firefighting and rescue activities. A body camera from an OFD Captain was obtained and reviewed.

---

<sup>8</sup> SF Attachment 1: OPD Incident Detail Report

<sup>9</sup> SF Attachment 2: OPD Injured Passenger Report

<sup>10</sup> SF Attachment 3: LAC Sherriff Incident Report.

<sup>11</sup> SF Attachment 4: OFD Incident Detail Report.

<sup>12</sup> SF Attachment 5: OFD Unified Command Notes.

<sup>13</sup> SF Attachment 6: OFD NFIRS Report.

## **6.2. Emergency Medical Services (EMS)**

EMS services are administered by the Ventura County Health Care Agency (VCHCA). The VCHA contracts AMR and Gold Coast private EMS providers.<sup>14</sup> VCHA provided the Ventura County Mass Casualty Incident (MCI) Plan.<sup>15</sup> They also provided the MCI Report for this crash.<sup>16</sup>

A star system triage with red (immediate), yellow (delayed), and Green (non-urgent) system was established with appropriate roles staffed by paramedics using a first in – last out approach. The first Advance Life Support (ALS) ambulance crew served as the Medical Communicator (medcom) and the triage group leader. Other initial arriving ALS crews were assigned to triage and treatment, with subsequent ALS units serving as transportation. Several interviews were conducted with VCHA supervisors and the ALS crews, as listed in Section 8 of this report. AMR is the parent company and owner of Gold Coast Ambulance.

## **7. Hospital Information**

The base hospital, Ventura County Medical Center took 9 patients. The other hospital patient totals from the scene were: Community Memorial Hospital received 8; Los Robles took 6; St. John’s Pleasant Valley Hospital received 3, and St. John’s Regional Medical Center received 2. One of the patients who self-transported to the hospital went to Community Memorial Hospital and the other went to St. John’s Regional Medical Center. Medical records for those transported to hospitals were obtained.

## **8. Information From Interviews and Statements**

### **8.1. Train Passengers**

Information about the crash and passenger experience was obtained through personal and telephone interviews and written statements.<sup>17</sup> Information was obtained from the train crew and other witnesses.<sup>18</sup> There were 10 train passengers interviewed and two additional passengers that provided a statement to police.

### **8.2. First Responder Interviews**

Information was obtained from interviews conducted with fire department and EMS first responders.

---

<sup>14</sup> AMR is the parent company of Gold Coast Ambulance.

<sup>15</sup> SF Attachment 7: Ventura County MCI Plan.

<sup>16</sup> SF Attachment 8: Ventura County MCI Report.

<sup>17</sup> SF Attachment 9: Passenger Interviews.

<sup>18</sup> Refer to the Human Performance Group Chairman’s Factual Report, available in the accident docket.

### **8.2.1. Fire Responder Interviews**

The fire crews described the actions to extinguish the truck and trailer fire, and the actions by other crews to rescue and assist with triage of the passengers. Some fire fighters expressed a concern during the interview regarding the staging and departure of ambulances with patients. They expressed a concern that triaged patients were retained on scene while the ambulance for transport and the destination were resolved. Some fire fighters also expressed a concern during the interviews that non-injured passengers were held on scene for an extended period of time.

The following fire crews were interviewed:

- Four members of the Engine 65 crew were interviewed on 2/25/15.<sup>19</sup> The crew interviewed included the Captain, the Engineer, and two Fire Fighters.
- Four members of the Engine 61 crew were interviewed on 2/25/15.<sup>20</sup> The crew interviewed included the Captain, the Engineer, and two Fire Fighters.
- Two members of the Truck 61 crew were interviewed on 2/25/15.<sup>21</sup> The crew interviewed included two Fire Fighters.
- Four members of the Engine 63 and Engine 64 crews were interviewed on 2/25/15.<sup>22</sup> The crew interviewed included the Captain, the Engineer, and a Fire Fighter from Engine 63, and the Captain from Engine 64.
- Three members of the Truck 68 crew were interviewed on 2/25/15.<sup>23</sup> The crew interviewed included the Captain, and two Fire Fighters.
- Three members of the Engine 67 crew were interviewed on 2/25/15.<sup>24</sup> The crew interviewed included the Captain, the Engineer, and a Fire Fighter.

### **8.2.2. EMS Interviews**

Telephone interviews were conducted with four EMS responders from AMR and Gold Coast Ambulance.<sup>25</sup> The EMS responders described being dispatched, how they approached the scene, and their actions with injured passengers. They described the triage process that was used and how the communication and supervision was conducted. They also described the process of assigning the first unit to arrive to do triage and to coordinate transport with the hospitals.

---

<sup>19</sup> SF Attachment 10: OFD Engine 65 Interviews

<sup>20</sup> SF Attachment 11: OFD Engine 61 Interviews

<sup>21</sup> SF Attachment 12: OFD Truck 61 Interviews

<sup>22</sup> SF Attachment 13: OFD Engine 63 and Engine 64 Interviews

<sup>23</sup> SF Attachment 14: OFD Truck 68 Interviews

<sup>24</sup> SF Attachment 15: OFD Engine 67 Interviews

<sup>25</sup> SF Attachment 16: EMS Interviews

## **E. DOCKET MATERIAL**

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

### LIST OF ATTACHMENTS

Survival Factors Attachment 1 -	OPD Incident Detail Report
Survival Factors Attachment 2 -	OPD Injured Passenger Report
Survival Factors Attachment 3 -	LA Sherriff Incident Report
Survival Factors Attachment 4 -	OFD Incident Detail Report
Survival Factors Attachment 5 -	OFD Unified Command Notes
Survival Factors Attachment 6-	OFD NFIRS
Survival Factors Attachment 7 -	Ventura County MCI Plan
Survival Factors Attachment 8 -	Ventura County MCI Report
Survival Factors Attachment 9 -	Passenger Interviews
Survival Factors Attachment 10 -	OFD Engine 65 Interviews
Survival Factors Attachment 11 -	OFD Engine 61 Interviews
Survival Factors Attachment 12 -	OFD Truck 61 Interviews
Survival Factors Attachment 13 -	OFD Engine 63 and Engine 64 Interviews
Survival Factors Attachment 14 -	OFD Truck 68 Interviews
Survival Factors Attachment 15 -	OFD Engine 67 Interviews
Survival Factors Attachment 16 -	EMS Interviews

### LIST OF PHOTOGRAPHS

Survival Factors Highway Photo 1 -	Toyota Left Front
Survival Factors Highway Photo 2 -	Toyota Left Side
Survival Factors Highway Photo 3 -	Toyota Rear
Survival Factors Highway Photo 4 -	Toyota Right Side

END OF REPORT

---

Thomas Barth, Ph.D.  
Senior Survival Factors Investigator