

CRASH DATA RESEARCH CENTER

Calspan Corporation
Buffalo, NY 14225

**CALSPAN REMOTE SIDE IMPACT INFLATABLE OCCUPANT PROTECTION
INVESTIGATION
VEHICLE CRASH INVESTIGATION**

CASE NO: CA04-032

VEHICLE: 2003 JAGUAR S-TYPE

LOCATION: NEW JERSEY

CRASH DATE: JUNE 2004

Contract No. DTNH22-01-C-17002

Prepared for:

U.S. Department of Transportation
National Highway Traffic Safety Administration
Washington, D.C. 20590

DISCLAIMER

This document is disseminated under the sponsorship of the Department of Transportation in the interest of information exchange. The United States Government assumes no responsibility for the contents or use thereof.

The opinions, findings, and conclusions expressed in this publication are those of the authors and not necessarily those of the National Highway Traffic Safety Administration.

The crash investigation process is an inexact science which requires that physical evidence such as skid marks, vehicular damage measurements, and occupant contact points are coupled with the investigator's expert knowledge and experience of vehicle dynamics and occupant kinematics in order to determine the pre-crash, crash, and post-crash movements of involved vehicles and occupants.

Because each crash is a unique sequence of events, generalized conclusions cannot be made concerning the crashworthiness performance of the involved vehicle(s) or their safety systems.

TECHNICAL REPORT STANDARD TITLE PAGE

<p>1. Report No. CA04-032</p>	<p>2. Government Accession No.</p>	<p>3. Recipient's Catalog No.</p>	
<p>4. Title and Subtitle Calspan Remote Side Impact Inflatable Occupant Protection Investigation Vehicle: 2003 Jaguar S-Type Location: State of New Jersey</p>		<p>5. Report Date: December 2005</p>	
		<p>6. Performing Organization Code</p>	
<p>7. Author(s) Crash Data Research Center</p>		<p>8. Performing Organization Report No.</p>	
<p>9. Performing Organization Name and Address Crash Data Research Center Calspan Corporation P.O. Box 400 Buffalo, New York 14225</p>		<p>10. Work Unit No. C00410.0000.0223</p>	
		<p>11. Contract or Grant No. DTNH22-01-C-17002</p>	
<p>12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Washington, D.C. 20590</p>		<p>13. Type of Report and Period Covered Technical Report Crash Date: June 2004</p>	
		<p>14. Sponsoring Agency Code</p>	
<p>15. Supplementary Note This remote investigative effort focused on the performance of the side impact occupant protection system that was present in a 2003 Jaguar S-Type four-door sedan.</p>			
<p>16. Abstract This remote investigative effort focused on the performance of the side impact occupant protection system that was present in a 2003 Jaguar S-Type four-door sedan. The Jaguar was involved in an intersection crash with a 1998 Jeep Cherokee that was sufficient to deploy the Jaguar's side Inflatable Curtain (IC), the driver's seat back air bag, and fire all four outboard seatbelt retractor pretensioners. Five adult passengers occupied the 2003 Jaguar. The vehicle was occupied by a restrained 36-year-old male driver, a restrained 24-year-old female seated in the front right position, a restrained 35-year-old male seated in the rear left position, an unrestrained 24-year-old female seated in the rear middle position, and a restrained 35-year-old male seated in the rear right position. The driver of the 2003 Jaguar S-Type was traveling eastbound on a four-lane roadway in the outboard lane and entered an intersection controlled by a flashing amber traffic signal. The driver of the 1998 Jeep Cherokee was traveling southbound on a two-lane one-way roadway and entered an intersection against a flashing red traffic signal. The front of the Jeep struck the left side of the Jaguar. The impact resulted in moderate damage to the Jaguar that was sufficient to deploy the left side Inflatable Curtain (IC) and front left seat back air bag. The impact deflected the Jaguar to the right in a counterclockwise motion and it came to rest in the southeast quadrant of the intersection. The Jeep rotated counterclockwise and came to rest in the mouth of the southbound leg of the intersection. The rear left occupant of the Jaguar sustained hospital-reported incapacitating injuries as a result of passenger compartment intrusion. He was extricated from the vehicle through the rear left door by rescue personnel and transported to a regional trauma center and admitted for five days. The driver sustained police-reported moderate injuries and was transported and released. The other three occupants sustained police-reported minor injuries and were transported and released. The occupant(s) of the 1998 Jeep Cherokee fled the scene of the crash; no investigation was completed on the Jeep and no further information is known.</p>			
<p>17. Key Words Side Impact Inflatable Curtain Deployment Seatback Inflatable Deployment</p>		<p>18. Distribution Statement General Public</p>	
<p>19. Security Classif. (of this report) Unclassified</p>	<p>20. Security Classif. (of this page) Unclassified</p>	<p>21. No. of Pages 11</p>	<p>22. Price</p>

TABLE OF CONTENTS

BACKGROUND 1

SUMMARY..... 2

CRASH SITE..... 2

VEHICLE DATA 2

1998 JEEP CHEROKEE 3

CRASH 4

POST-CRASH 4

VEHICLE DAMAGE 4

INTERIOR DAMAGE – 2003 JAGUAR S-TYPE 5

MANUAL RESTRAINTS – 2003 JAGUAR S-TYPE 6

FRONTAL AIR BAG SYSTEM – 2003 JAGUAR S-TYPE 6

SIDE IMPACT INFLATABLE CURTAIN – 2003 JAGUAR S-TYPE 6

OCCUPANT DEMOGRAPHICS – 2003 JAGUAR S-TYPE 7

DRIVER 7

DRIVER KINEMATICS 7

FRONT RIGHT PASSENGER 7

FRONT RIGHT PASSENGER KINEMATICS 8

REAR LEFT PASSENGER..... 8

REAR LEFT PASSENGER KINEMATICS..... 9

REAR CENTER PASSENGER 9

REAR CENTER PASSENGER KINEMATICS 9

REAR RIGHT PASSENGER..... 9

REAR RIGHT PASSENGER KINEMATICS..... 10

FIGURE 8 – SCENE SCHEMATIC FROM CIREN CASE: NJ7967-340 11

**CALSPAN REMOTE SIDE IMPACT INFLATABLE OCCUPANT PROTECTION
INVESTIGATION
CASE NO.: CA04-032
LOCATION: STATE OF NEW JERSEY
VEHICLE: 2003 JAGUAR S-TYPE
CRASH DATE: JUNE 2004**

BACKGROUND

This remote investigative effort focused on the performance of the side impact occupant protection system that was present in a 2003 Jaguar S-Type four-door sedan. The Jaguar (**Figure 1**) was involved in an intersection crash with a 1998 Jeep Cherokee that was sufficient to deploy the Jaguar's side Inflatable Curtain (IC), the driver's seat back air bag, and fire all four outboard seatbelt retractor pretensioners. Five adult passengers occupied the 2003 Jaguar. The vehicle was occupied by a restrained 36-year-old male driver, a restrained 24-year-old female seated in the front right position, a restrained 35-year-old male seated in the



Figure 1 - Damaged 2003 Jaguar S-Type.

rear left position, an unrestrained 24-year-old female seated in the rear middle position, and a restrained 35-year-old male seated in the rear right position. The driver of the 2003 Jaguar S-Type was traveling eastbound on a four-lane roadway in the outboard lane and entered an intersection controlled by a flashing amber traffic signal. The driver of the 1998 Jeep Cherokee was traveling southbound on a two-lane one-way roadway and entered an intersection against a flashing red traffic signal. The front of the Jeep struck the left side of the Jaguar. The impact resulted in moderate damage to the Jaguar that was sufficient to deploy the left side Inflatable Curtain (IC) and front left seat back air bag. The impact deflected the Jaguar to the right in a counterclockwise motion and it came to rest in the southeast quadrant of the intersection. The Jeep rotated counterclockwise and came to rest in the mouth of the southbound leg of the intersection. The rear left occupant of the Jaguar sustained hospital-reported incapacitating injuries as a result of passenger compartment intrusion. He was extricated from the vehicle through the rear left door by rescue personnel and transported to a regional trauma center and admitted for five days. The driver sustained police-reported moderate injuries and was transported and released. The other three occupants sustained police-reported minor injuries and were transported and released. The occupant(s) of the 1998 Jeep Cherokee fled the scene of the crash; no investigation was completed on the Jeep and no further information is known.

The Crash Injury Research and Engineering Network (CIREN) identified this crash. This crash was selected as CIREN Case No.: NJ7967-340, and the CIREN researcher

performed the vehicle inspection and scene inspection. Due to the deployment of the side impact inflatable occupant protection system, a remote investigation was assigned to the Calspan SCI team on July 21, 2004.

SUMMARY

Crash Site

This two-vehicle crash occurred during the early morning hours under dark but lighted conditions in June 2004 in the state of New Jersey. At the time of the crash, the weather was clear and the asphalt roadway surface was dry. The crash occurred on the south side of a four-lane east/west roadway in the outboard lane of a four-leg intersection. The east/west roadway consisted of four lanes separated by a painted yellow divider approximately 3.0 meters (9.8') in width and designed to divide the sides of the roadways in each direction. The roadway exhibited a slight positive grade in both east/west directions and was slightly curved left from the eastbound perspective. Concrete sidewalks and commercial buildings bordered the roadway. The north-leg of the north/south roadway consisted of two lanes and was designated a one-way roadway. The southbound leg of this intersection was a one-way access road connecting to an expressway. Two-phase flashing traffic signals controlled each leg of the intersection and were reported to be functional at the time of the crash. The posted speed limit for the east/west roadway was 64 km/h (40 mph) and 40 km/h (25 mph) for the north/south roadway. A conceptual scene schematic is included as **Figure 8** of this narrative report.

Vehicle Data

2003 Jaguar S-Type

The 2003 Jaguar S-Type was identified by the Vehicle Identification Number (VIN): SAJEA01U23H (production sequence omitted). The vehicle was a four-door sedan that was equipped with a 4.2 liter, V-8 engine, which operated on unleaded gasoline, a 6-speed electronic automatic transmission, and four-wheel anti-lock brakes (ABS) disc brakes. The Jaguar was also equipped with Dynamic Stability Control (DSC), which detected and helped correct the loss of lateral traction during cornering. The system automatically reduces the throttle and applies brakes in response to traction loss. The DSC system integrated Emergency Brake Assist (EBA), which optimized braking pressure at each wheel to ensure stability during hard braking and cornering. The vehicle was also configured with an electronic tilt and telescoping steering wheel with automatic tilt away, as well as electrically adjustable pedals. At the time of the CIREN vehicle inspection, the tilt steering wheel was adjusted to the center position and the telescoping adjustment was between midpoint and full forward. The position of the adjustable pedals was not determined. The electronic odometer could not be read due to a lack of power to the vehicle.

The Jaguar was equipped with Michelin Pilot AXSE P235/50R17 tires on OEM alloy wheels. The manufacturer's recommended tire pressure was 241 kPa (35 PSI). The specific tire information at the time of the vehicle inspection was as follows:

Position	Measured Pressure	Measured Tread Depth	Restricted	Damage
LF	0.0 kPa	6.0 mm (8/32")	No	None
LR	0.0 kPa	6.0 mm (8/32")	No	None
RF	0.0 kPa	6.0 mm (8/32")	No	None
RR	0.0 kPa	6.0 mm (8/32")	No	None

The seating in the Jaguar S-Type was configured with leather-trimmed bucket seats for the driver and front right passenger positions. The front seating area was designed with 10-way driver and 8-way passenger electrically adjustable seats with lumbar support. The vehicle was also equipped with heated seats, multi-position memory, and adjustable head restraints.

At the time of the CIREN vehicle inspection the driver's seat was at the full rear position. The seat back was slightly reclined and the head restraint was approximately 1.5 cm (0.6") above full down. The specific location of the adjustable pedals was unknown. The front right seat track was in the full rear position and the seatback was slightly reclined. The adjustable head restraint was in the full down position.

The rear seating area was configured with a leather-trimmed bench seat with folding 60/40 split backs and adjustable head restraints for both outboard positions. The folding back was equipped with a pass-through to the trunk located behind the seat. A Lower Anchors and Tethers for Children (LATCH) child seat anchorage system was present in the back seating area, but was not in use during the crash.

1998 Jeep Cherokee

The 1998 Jeep Cherokee was not inspected during the CIREN inspection because it fled from the scene.

Crash Sequence

Pre-Crash

The 35-year-old male driver of the Jaguar S-Type entered his vehicle into an intersection with a flashing amber traffic signal (**Figure 2**). The driver of the Jeep Cherokee entered the intersection against a red flashing traffic signal (**Figure 3**). The Jaguar was traveling in the outboard eastbound lane. The lane in which the Jeep was traveling was unknown. It is not known whether either driver attempted any avoidance actions prior to the impact.



Figure 2 - Eastbound approach for the Jaguar S-Type



Figure 3 - The southbound approach of the 1998 Jeep Cherokee

Crash

The full frontal plane of the Jeep Cherokee impacted the left passenger compartment area of the Jaguar S-Type. Resultant directions of force were within the 10 o'clock sector for the Jaguar and 1 o'clock for the striking Jeep Cherokee. The impact resulted in moderate damage to the Jaguar that was sufficient to deploy the left side IC and front left seatback air bag. Both vehicles came to rest after briefly rotating counterclockwise following the initial impact. The Missing Vehicle routine of the Winsmash program computed a total delta-V of 21.0 km/h (13.1 mph), a longitudinal delta-V of 7.0 km/h (4.3 mph), and a lateral delta-V of 20.0 km/h (12.4 mph) for the Jaguar. The Winsmash program computed a total delta-V of 21.0 km/h (13.1 mph) for the Jeep. The damage computed was based on the left side crush profile taken to the mid-door of the Jaguar.

Post-Crash

Rescue personnel removed the driver and rear left occupant from the Jaguar S-Type. The driver sustained police-reported moderate injuries, was removed from the vehicle, and was transported and released. The rear left occupant sustained hospital-reported severe injuries and was removed from the vehicle. He was transported by ambulance to a regional trauma center and admitted for treatment. The other three occupants sustained police-reported minor injuries, exited the vehicle under their own power, and were transported and released. The driver of the Jeep fled the scene of the crash on foot. It was not known whether there were any injured passengers in the Jeep.

Vehicle Damage

Exterior Damage – 2003 Jaguar S-Type

The 2003 Jaguar S-Type sustained moderate left side damage (**Figure 4**) as a result of the impact with the 1998 Jeep Cherokee. The direct damage began 20.0 cm (7.9") aft of the front left axle and extended rearward 250.0 cm (98.4"). The direct damage extended vertically above the beltline. The maximum crush was located 120.0 cm (47.2") aft of the front left axle and measured 36.0 cm (14.2"). The combined direct and induced damage measured 250.0 cm (98.4") and began 20.0 cm (7.9") aft of the front left axle and

ending 12.0 cm (4.7") forward of the left rear axle. Both left side doors were crushed laterally and jammed shut. Induced buckling was present on the front left fender, along the roof, and on the right side doors. The front left and rear left side glazing, and the backlight glazing was shattered due to impact forces. The windshield sustained stress cracking extending across the entire width. The left side window frames were displaced approximately 5.0 cm (2.0") vertically above the roofline. Six crush measurements were documented at the mid-door and were as follows: C1 = 3.0 cm (1.2"), C2 = 12.0 cm (4.7"), C3 = 24.0 cm (9.4"), C4 = 36.0 cm (14.2"), C5 = 10.0 cm (3.9"), C6 = 7.0 cm (2.8"). The Collision Deformation Classification (CDC) for the impact with the 1998 Jeep Cherokee was 10-LYAW-3.



Figure 4 - Damaged left side of the 2003 Jaguar S-Type

Interior Damage – 2003 Jaguar S-Type

The 2003 Jaguar S-Type sustained moderate interior damage as a result of lateral passenger compartment intrusion (**Figure 5**). A contact point was present on the armrest of the back left door. As the back left occupant loaded the door panel, it sustained a crack on the plastic trim. Both left side occupants loaded the side air bags and safety belts; however, no discernable contact evidence was present on these components. The front left and rear left doors were jammed shut. Lateral intrusion into the driver's seating position included the front left door, left A- and B- pillars, and the left sill. The front left seat was compressed slightly by the intrusion of the driver's door. Lateral intrusion into the back left passenger's seating position included the back left door, back left sill, the back left roof-side-rail, and the C- pillar. The back left seat was compressed slightly due to the lateral intrusion of the left door panel. The extent of the intrusion of these components is documented in the table that follows:



Figure 5 - Interior rear left intruded door

Seating Position	Intruded Component	Magnitude	Direction
Front Left	Door Panel	8.0 cm (3.2")	Lateral
Front Left	Floor Pan	11.0 cm (4.3")	Lateral
Front Left	A Pillar	4.0 cm (1.6")	Lateral
Front Left	B-Pillar	5.0 cm (2.0")	Lateral
Front Left	Roof Side Rail	6.0 cm (2.4")	Lateral
Rear Left	Floor Pan	4.0 cm (1.6")	Lateral

Seating Position	Intruded Component	Magnitude	Direction
Rear Left	Door Panel	4.0 cm (1.6")	Lateral
Rear Left	Roof Side Rail	7.0 cm (2.8")	Lateral
Rear Left	C-Pillar	5.0 cm (2.0")	Lateral

Manual Restraints – 2003 Jaguar S-Type

The 2003 Jaguar S-Type was configured with manual 3-point lap and shoulder belts for all five seating positions. The driver’s safety belt was configured with a sliding latch plate, Emergency Locking Retractor (ELR), and an adjustable D-ring that was located in the full-up position at the time of the vehicle inspection. The other four seating positions were configured with sliding latch plates and switchable ELR/Automatic Locking Retractors (ALR), which were found to be in ELR mode at the time of the inspection. The front right passenger’s belt had an adjustable D-ring and was located in the full-down position. The investigation revealed no discernable contact evidence on any of the manual 3-point restraints. All four outboard seating positions were equipped with 3-point manual restraints and retractor pretensioners, which fired during the crash.

Frontal Air Bag System – 2003 Jaguar S-Type

The 2003 Jaguar S-Type was equipped with multi-stage frontal air bags for the driver and front right passenger positions. The driver’s air bag was housed in the center of the steering wheel hub and the front right passenger’s air bag was housed in a mid-mount module located on the right instrument panel. The frontal air bags did not deploy in this crash.

Side Impact Inflatable Curtain – 2003 Jaguar S-Type

The 2003 Jaguar S-Type was equipped with seatback-mounted side impact air bags for the driver and front right passenger positions. It was also equipped with IC air bags in all four outboard positions. The seatback-mounted and IC air bags were designed to provide head and torso protection, respectively.

The driver’s side seat back-mounted and IC air bags deployed as a result of the left side impact with the 1998 Jeep Cherokee. The seat back air bag (**Figure 6**) deployed through a tear seam along the outboard edge of the seat back that measured 39.0 cm (15.4”) in length. The air bag was rectangular in shape and measured 40.0 cm (15.7”) in height and 20.0 cm (7.9”) in width. The seat back air bag was not tethered and was vented by one vent port located in the 8 o’clock position on the lower left inboard aspect of the deployed air bag.

The left side IC air bag also deployed as a result of the left side impact with the 1998 Jeep Cherokee. The IC (**Figure 7**) deployed through the headliner seam at the inboard aspect of the left side roof side rail that measured 135.0 cm (53.1”) in width. The air bag was rectangular in shape, extended from the A-pillar to the C-pillar, and measured 27.0 cm (10.6”) in height and 132.0 cm (52.0”) in width. The IC was not internally tethered nor was it configured with vent ports



Figure 6 - Driver's seat back air bag.



Figure 7 - Rear left Inflatable Curtain (IC)

The investigation revealed no discernable contact evidence on the left side air bags; however, the driver and rear left passenger reported to the CIREN investigator that they had contacted their respective air bags.

Occupant Demographics – 2003 Jaguar S-Type

Driver

Age/Sex:	36-year old male
Height:	Not Available
Weight:	Not Available
Seat track Position:	Seat at rear most track position
Manual Restraint Use:	Manual 3-point lap and shoulder belt
Usage Source:	Vehicle Inspection
Eyewear:	Not Available
Type of Medical Treatment:	Transported by ambulance to a local hospital for treatment and released.

Driver Kinematics

The 36-year-old male driver of the 2003 Jaguar S-Type was seated in an unknown posture and was restrained by the manual 3-point lap and shoulder belt. At the time of the vehicle inspection, the driver's bucket seat was in the full rear position and the seat back was slightly reclined. At impact with the 1998 Jeep Cherokee, the left side seat back and IC air bags deployed. At impact, the driver initiated a lateral trajectory and loaded the safety belt, the seat back air bag and the IC. The driver's frontal air bag housed in the steering wheel hub did not deploy; however, the seatbelt retractor pretensioner fired. The driver was only minimally displaced and sustained police-reported moderate injuries. He was transported to a medical facility and released.

Front Right Passenger

Age/Sex:	36-year old male
Height:	Not Available
Weight:	Not Available

Seat track Position: Seat at rear most track position
 Manual Restraint Use: Manual 3-point lap and shoulder belt
 Usage Source: Vehicle Inspection
 Eyewear: Not Available
 Type of Medical Treatment: Transported by ambulance to a local hospital for treatment and released

Front Right Passenger Kinematics

The 24-year-old front right female passenger of the Jaguar was seated in an unknown posture and was restrained by the manual 3-point lap and shoulder belt. The safety belt was configured with a retractor pretensioner, which fired during the crash. At the time of the inspection, the front right seat was in the rear most track position and the seat back was slightly reclined. At impact with the 1998 Jeep Cherokee, she initiated a lateral trajectory toward the centerline of the vehicle and loaded the safety belt. She was minimally displaced and exited the vehicle with some assistance. She sustained police-reported minor injuries and was transported to a medical facility and released.

Rear Left Passenger

Age/Sex: 35-year old male
 Height: 191 cm (75.2")
 Weight: 113 kg (249 lb)
 Seat track Position: Not Adjustable
 Manual Restraint Use: Manual 3-point lap and shoulder belt
 Usage Source: Vehicle Inspection
 Eyewear: None
 Type of Medical Treatment: Transported by ambulance to a regional trauma center for treatment and admitted

Injury	Injury Severity AIS 90 / Update 98	Injury Mechanism
Bilateral pulmonary contusions	Severe (441410.4,3)	Intruding rear left door panel
Sternum fracture	Moderate (450804.2,9)	Intruding rear left door panel
Multiple rib fractures, NFS	Moderate (450210.2,9)	Intruding rear left door panel
Diaphragm injury NFS	Moderate (440699.2,8)	Intruding rear left door panel
Chest contusion, NFS	Minor (490402.1,9)	Intruding rear left door panel
Lower extremity abrasions, NFS	Minor (890202.1,9)	Intruding rear left door panel

Source – CIREN Investigation

Rear Left Passenger Kinematics

The 35-year-old rear left male passenger of the Jaguar was seated in an unknown posture and was restrained by the manual 3-point lap and shoulder belt. The lap and shoulder belt was configured with a retractor pretensioner, which fired during the crash. The rescue personnel cut the safety belt prior to removing this passenger. At impact with the Jeep, he initiated a lateral trajectory to the left and loaded the rear left door panel, evidenced by cracking on the door armrest. According to the investigation performed by CIREN, the loading of the intruded rear left door panel resulted in thoracic injuries including bilateral pulmonary contusions, a sternum fracture, multiple rib fractures, a chest contusion, lower extremity abrasions, and a non-specified injury to his diaphragm. The rear left passenger also loaded the IC, but sustained no head injuries. Due to the left side doors being jammed shut, rescue personnel extricated this passenger through the rear left door after incising the left side A- B- and C- pillars. He was transported to a trauma center, admitted for treatment, and released after 5 days.

Rear Center Passenger

Age/Sex:	24-year old female
Height:	Not Available
Weight:	Not Available
Seat track Position:	Not Adjustable
Manual Restraint Use:	None Used
Usage Source:	Vehicle Inspection
Eyewear:	Not Available
Type of Medical Treatment:	Transported by ambulance to a local hospital for treatment and released.

Rear Center Passenger Kinematics

The 24-year-old rear center female passenger of the Jaguar was seated in an unknown posture and was not restrained by the manual 3-point lap and shoulder belt. At impact with the Jeep, she was minimally displaced and initiated a lateral trajectory to the left. She exited the vehicle under her own power. She sustained police-reported minor injuries and was transported to a medical facility and released.

Rear Right Passenger

Age/Sex:	35-year old male
Height:	Not Available
Weight:	Not Available
Seat track Position:	Not Adjustable
Manual Restraint Use:	Manual 3-point lap and shoulder belt
Usage Source:	Vehicle Inspection
Eyewear:	Not Available
Type of Medical Treatment:	Transported by ambulance to a local hospital for treatment and released.

Rear Right Passenger Kinematics

The 35-year-old rear right male passenger of the Jaguar was seated in an unknown posture and was restrained by the manual 3-point lap and shoulder belt. The lap and shoulder belt was configured with a retractor pretensioner, which fired during the crash. At impact with the Jeep, he was minimally displaced and initiated a lateral trajectory to the left. He loaded the safety belt and sustained police-reported minor injuries. He exited the vehicle under his own power. He sustained police-reported minor injuries and was transported to a medical facility and released.

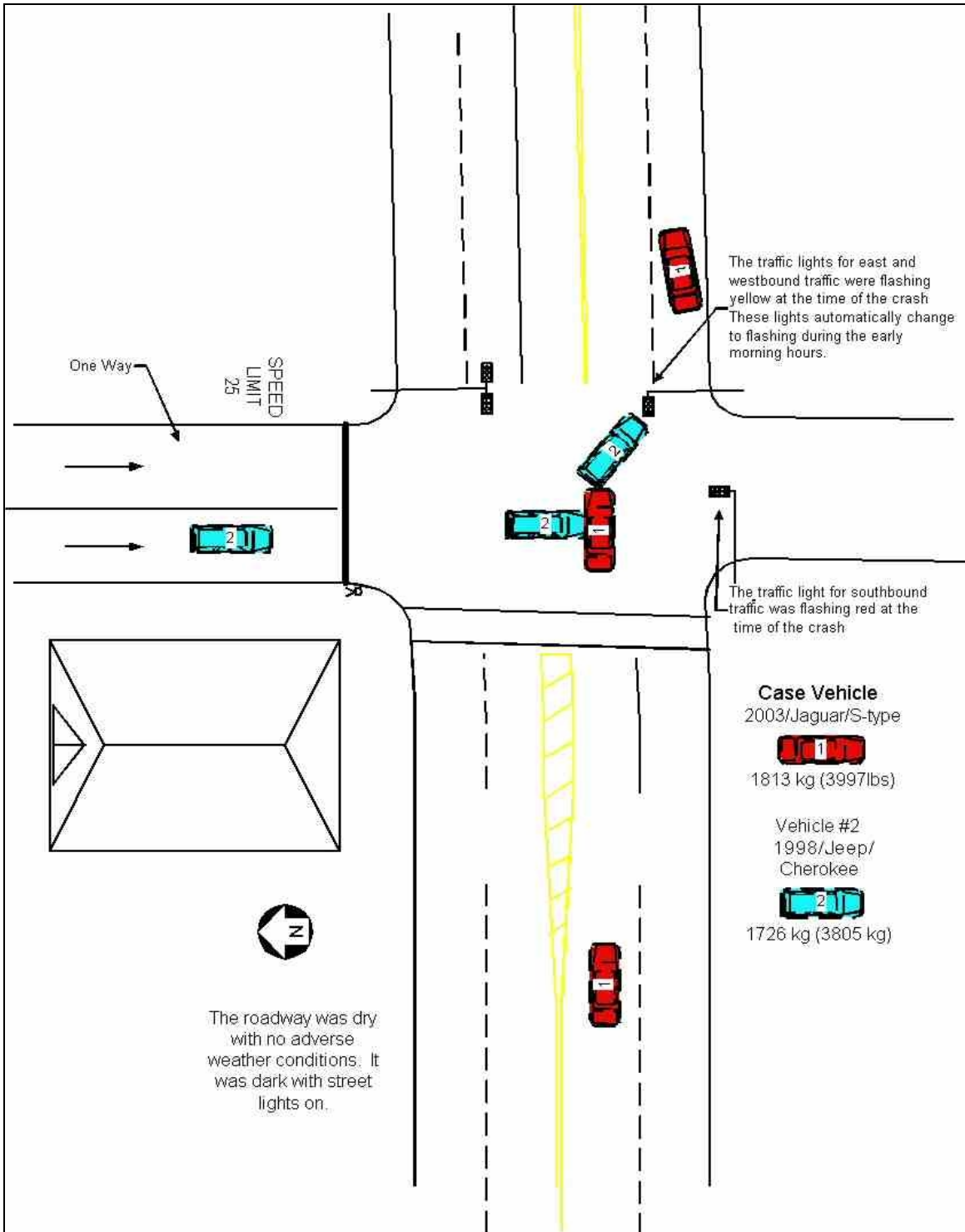


Figure 8 – Scene Schematic from CIREN Case: NJ7967-340