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ON-SITE NOT IN TRAFFIC SURVEILLANCE BACK OVER INVESTIGATION

CASE NUMBER - IN08027
LOCATION - INDIANA
VEHICLE - 2004 NISSAN TITAN 4X4 CREW CAB
CRASH DATE - June 2008

Submitted:

August 19, 2008

Contract Number: DTNH22-07-C-00044

Prepared for:

U.S. Department of Transportation
National Highway Traffic Safety Administration
National Center for Statistics and Analysis
Washington, D.C. 20590-0003

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The crash investigation process is an inexact science which requires that physical evidence such as skid marks, vehicular damage measurements, and occupant contact points be 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 Documentation Page

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12. *Sponsoring Agency Name and Address* U.S. Department of Transportation (NVS-411) National Highway Traffic Safety Administration National Center for Statistics and Analysis Washington, D.C. 20590-0003		13. *Type of Report and Period Covered* Technical Report Incident Date: June 2008 14. *Sponsoring Agency Code*	
15. *Supplementary Notes* On-site not in traffic surveillance back over investigation involving a 2004 Nissan Titan 4x4 Crew Cab equipped with the manufacturer's Rear Sonar System (RSS).			
16. *Abstract* This report covers an on-site not in traffic surveillance back over investigation involving a 2004 Nissan Titan 4x4 Crew Cab and a nonmotorist (64-year-old, female), who was backed over in a driveway. The driver and nonmotorist were preparing to leave their residence and met at the back left corner of the Nissan, which was parked in a garage. They decided the nonmotorist would walk back to a bag of clothes that the driver had placed on a sidewalk near the garage, and the driver would back up and load them in the vehicle. The driver entered the vehicle and prepared to back up. Just prior to the driver backing up, the nonmotorist fell down directly behind the vehicle within its blind zone as she walked toward the sidewalk. The driver backed up while looking through his left side view mirror. He did not see the nonmotorist and the right rear tire rolled onto her torso. The driver felt a bump when this occurred, stopped and pulled forward to final rest. The driver stated that the RSS did not sound an alarm as he backed. An ambulance was called to the scene and transported the nonmotorist to a hospital where she died several hours later.			
17. *Key Words* Back Over Fatality Motor Vehicle Traffic Crash Injury Severity		18. *Distribution Statement* General Public	
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BACKGROUND

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This incident was brought to the National Highway Traffic Safety Administration's attention on or before June 19, 2008 by an Associated Press news story. The incident occurred in June, 2008, at 15:21 hours, in Indiana and involved a 2004 Nissan Titan 4x4 Crew Cab pickup truck (**Figure 1**). This incident is of special interest because the Nissan's 74-year-old driver backed over a nonmotorist (64-year-old wife of the driver). The incident was reported to the county sheriff's department the day after it occurred. An Indiana Officer's Standard Crash Report was completed and a copy was submitted to the state. This contractor inspected the scene, Nissan and interviewed the Nissan's driver on July 31, 2008. This report is based on the police crash report, scene and vehicle inspections, and an interview with the Nissan's driver.

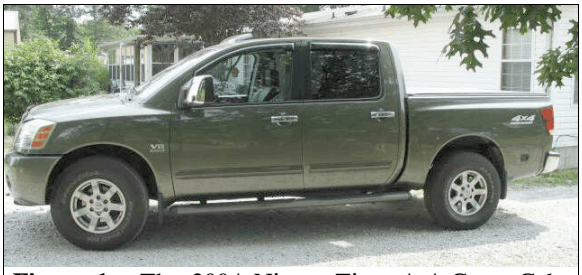


Figure 1: The 2004 Nissan Titan 4x4 Crew Cab pickup truck

SUMMARY

This incident occurred during daylight hours under clear and dry weather conditions. The driver and nonmotorist were preparing to leave their residence and met at the back left corner of the Nissan, which was parked in a garage. They decided the nonmotorist would walk back to a bag of clothes that the driver had placed on a sidewalk near the garage, and the driver would back up and load them in the vehicle. The driver entered the vehicle and prepared to back up. Just prior to the driver backing up, the nonmotorist fell down directly behind the vehicle within its blind zone as she walked toward the sidewalk. The driver backed up while looking through his left side view mirror. He did not see the nonmotorist and the right rear tire rolled onto her torso. The driver felt a bump when this occurred, stopped and pulled forward to final rest. The driver stated that the Nissan's Rear Sonar System (RSS) did not sound an alarm as he backed. An ambulance was called to the scene and transported the nonmotorist to a hospital where she died several hours later.

CRASH CIRCUMSTANCES

Crash Environment: The Nissan was parked within the driver's detached garage, which was located 12.2 meters (40 feet) east of his residence (**Figure 2**). A gravel driveway was located on the north side of the residence and connected to the garage. A gravel parking area was located between the residence and the garage, and a concrete sidewalk connected the residence to the parking area and the garage. The concrete garage floor was level and the driveway had a negative 2% grade in the direction the vehicle was backing.

Figure 2: Overview of incident scene from north side of driveway; orange cone on left is driver reported final rest position of nonmotorist; orange cone on right is location of bag of clothes; driver was intending to back up to the bag of clothes when the incident occurred.

At the time of the incident the light condition was daylight, the weather was clear and the driveway surface was dry.

Pre-Crash: The 74-year-old driver and his 64-year-old wife (i.e., the nonmotorist) were inside the residence and had prepared a bag of clothes that they were going to transport to a charity. The driver was in good health and wore glasses to correct his vision for near sightedness. He did not have a hearing deficiency. The driver exited the residence and walked on the sidewalk to the parking area where he sat the bag of clothes down on the sidewalk (**Figure 2**). He then walked toward the vehicle. The nonmotorist exited the residence after the driver and also walked to the vehicle. They stopped at the back left corner of the vehicle and decided that the nonmotorist would walk back to the bag of clothes and the driver would back the vehicle to the clothes and load them. The driver walked along the left side of the vehicle (**Figure 3**), entered and prepared to back up. He did not look back toward the nonmotorist while walking to the left front door and did not see the her again until after the incident. Prior to backing, he checked both side view mirrors and the rearview mirror. The vehicle was also equipped with rectangular convex side view mirrors, which provide a wide area of visibility adjacent to the side and behind of the vehicle. The driver did not check either convex mirror and did not check behind the vehicle by looking over his right shoulder out of the backlight. He estimated that the time between entering the vehicle and starting the backing maneuver was 5-10 seconds. Just prior to the driver backing up, the nonmotorist fell down directly behind the vehicle within its blind zone as she walked toward the sidewalk.

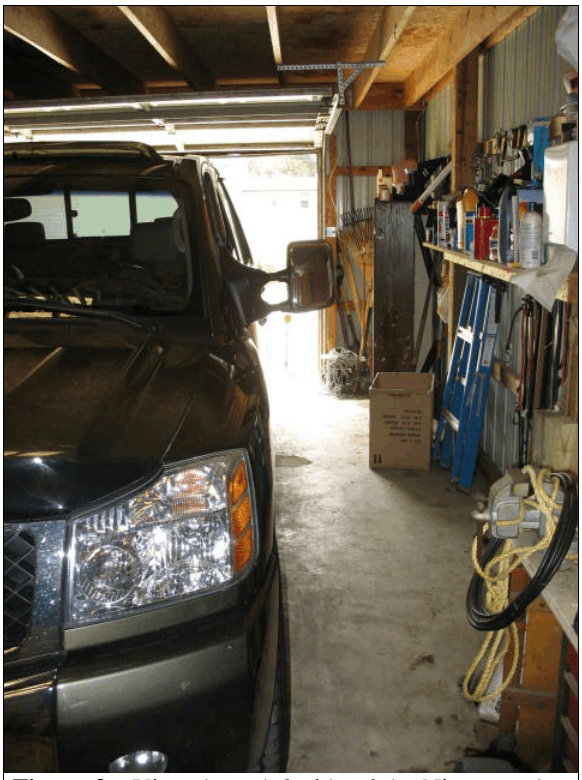


Figure 3: View down left side of the Nissan to the garage door

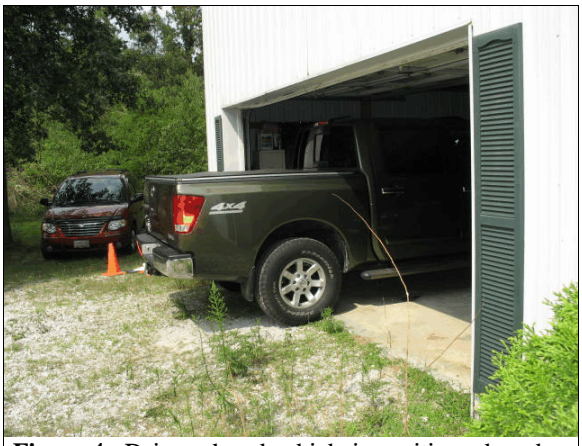


Figure 4: Driver placed vehicle in position where he stopped after feeling a bump

Crash: The driver backed the vehicle out of the garage while looking through the left side view mirror. He backed slowly by moving his foot on and off the brake pedal because the left side of the vehicle was 0.6 meter (2 feet) from the garage door frame, and he was closely watching the side of the vehicle. The driver stated that the vehicle's RSS did not sound a warning as he backed up. He estimated he had backed approximately 2 seconds when he felt a bump. He stopped the vehicle (**Figure 4**), drove forward and stopped at the approximate location where he started. He

exited the vehicle and found the nonmotorist laying on the ground (**Figure 5**). She was located 0.5 meter (1.6 feet) behind and near the center of the vehicle with her head toward the vehicle's right side. She told the driver she had fallen down and the vehicle ran over her. She also complained of extreme pain to her abdomen. Based on the information obtained from the driver and the on-site investigation, the vehicle traveled backward 1.7 meters (5.6 feet) where the right rear tire rolled onto the nonmotorist's torso. It did not pass completely over the nonmotorist. The driver stopped the vehicle and drove forward 1.7 meters to the final rest position. The driver estimated that his speed while backing was 2 km/h (1 mph).

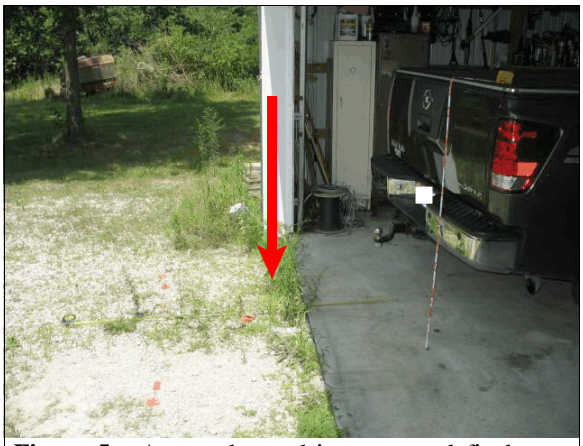


Figure 5: Arrow shows driver reported final rest position of nonmotorist after he pulled vehicle forward

Post-Crash: The driver called 911 and the nonmotorist was transported by ambulance to a hospital. She was pronounced dead several hours following the incident. The driver stated that the nonmotorist sustained a "split liver" and had severe internal bleeding. This contractor interpreted the split liver description to mean a ruptured liver.

CASE VEHICLE

The 2004 Nissan Titan was a 4-wheel drive, 4-door, crew cab pickup truck (VIN: 1N6AA07B54N------) equipped with a 5.6L, V-8 engine, automatic transmission and Nissan's RSS. The second row windows and the backlight were equipped with AS-3 tinted glazing. The vehicle was also equipped with P285/70R17 size tires, which were the manufacturer's recommended size tires. The vehicle's specified wheelbase was 357 centimeters (140.6 inches), the specified rear overhang was 116 centimeters (45.7 inches), and the specified overall length was 565 centimeters (222.4 inches). The distance from the ground to the bottom of the back bumper was 55 centimeters (21.7 inches) and the distance from the ground to the beltline was 129 centimeters (50.8 inches).

The RSS was designed with four sensors, each located on the back bumper (**Figure 6**). The distance from the ground to each of the four RSS sensors was 71 centimeters (27.9 inches). The sensors were located 43 centimeters (16.9 inches) and 79 centimeters (31.1 inches) from each side of the vehicle's centerline. When the sensors detect a large stationary object within 1.8 meters (6 feet) of the back bumper, a beeping tone alerts the driver. The RSS may not detect objects close to the bumper or on the ground. The pages from a 2004 Nissan Titan owner's manual, which

Figure 6: Arrows show each of the four RSS sensors

describe the RSS, are presented at the end of this report.

Figure 7: The orange squares on the ground show the locations where the RSS detected the approach of the SCI investigator; also see Figure 5

The driver reported that he was familiar with the RSS and how it functioned. He had experienced the warning sound on several occasions when backing toward a large object such as another vehicle or building. He was not aware that the system was equipped with an off switch, which was located on the lower left instrument panel. When the system is turned off, it is automatically enabled when the ignition switch is turned on.

The SCI investigator conducted tests to determine the size of the RSS detection zone for an adult of the investigator's height and weight [185 centimeters (73 inches) and 84 kilograms (185 pounds)]. The investigator slowly approached the back of the vehicle from each corner as well as along the vehicle's centerline while the driver sat in the driver's seat with his foot on the brake and the transmission in reverse. The driver honked the horn when the RSS warning sounded and the investigator marked and measured each location (**Figure 7**). The investigator also approached each back corner from the side until the warning sounded and noted those positions as well. When approaching each corner from the back, the warning sounded when the investigator was 155 centimeters (61 inches) from the bumper. When the vehicle was approached along the centerline, the warning sounded when the investigator was 99 centimeters (39 inches) from the bumper. When approached from the side at the corner detection points, the warning sounded when the investigator was 12 centimeters (4.7 inches) inboard of the right corner and 14 centimeters (5.5 inches) inboard of the left corner. The warning on page 5-31 of the owner's manual indicated that the RSS may not detect objects close to the bumper or on the ground. Since the nonmotorist was on the ground directly behind the vehicle when the driver began to back up, it is likely that the warning did not sound as reported by the driver.

CASE VEHICLE DAMAGE

There was no damage and no evidence of nonmotorist contact to the Nissan's back bumper or rear tires. Based on the driver's description of the incident and the Collision Deformation Classification (CDC) guidelines for pedestrian impacts, a CDC was assigned to identify the tire contact. The CDC was **06-BRWN-4** (**180** degrees).

CASE VEHICLE DRIVER

The Nissan's driver was a 74-year-old, male, 178 centimeters (70 inches) tall and weighed 109 kilograms (240 pounds). The driver was the original owner of the vehicle and drove it in and out of the garage on a daily basis. He was wearing eyeglasses at the time of the incident, which corrected his vision for near sightedness.

A visibility study was conducted at the incident scene in order to determine the nominal blind zone behind the vehicle as well as the nominal blind zone of both side view mirrors and the rearview mirror. The standard 71 centimeters (28 inches) high target was used for the observations. The Nissan's driver assisted the SCI investigator in making the visibility observations. The driver's eye height above the ground was measured as 162 centimeters (63.8 inches) as he sat in the driver's seat. The driver's seat track was adjusted between the middle and full rear positions, which was his normal seat track position. This placed his head 323 centimeters (127.2 inches) forward of the back bumper.

The assessments for each side view mirror were made by moving the target along the side of the vehicle until the driver could see it (**Figures 8** and **9**). The driver honked the horn when the target first came into view and the location was marked. The target was then moved laterally away from the side of the vehicle until it went out of the mirror's field of view (**Figure 10**) and this location was marked. The same procedure was used to assess the rectangular convex side view mirrors. The rearview mirror blind zone and the blind zone behind the vehicle were assessed as the driver looked through the rearview mirror (**Figures 11** and **12**) and over his right shoulder out of the backlight (**Figures 13** and **14**). The target was moved rearward along the vehicle's centerline until the driver could see it. The target was then moved to the left and right until it went out of the driver's view. Each position was located relative to the vehicle and the measurements, blind zone behind the vehicle, and the field of view of all the mirrors are depicted on the Nominal Visibility Diagram at the end of this report. The visibility study showed that the driver could not have seen the nonmotorist on the ground directly behind the vehicle because the depth of the blind zone was 16 meters (52.5 feet) and no mirror's field of view covered the area behind the vehicle where the nonmotorist had fallen.

Figure 8: Close view through left side view mirror from driver's seat; target where driver could first see it as moved rearward along left side of vehicle

Figure 9: Close view through right side view mirror from driver's seat; target in location where driver could first see it as it was moved rearward along right side of vehicle

Figure 10: Close view through right side view mirror from driver's seat; target in location where it began to go out of mirror's lateral field of view

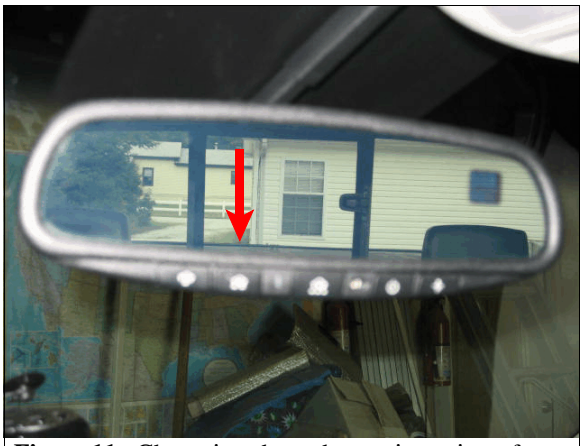


Figure 11: Close view through rearview mirror from driver's seat; arrow shows target

Figure 12: Location of target where driver could first see it while looking through rearview mirror; distance from back bumper to target was 17.6 meters (57.7 feet)

Figure 13: View through backlight from driver's seat; arrow shows target

Figure 14: Arrow shows target in location where driver could first see it while looking over right shoulder out of backlight; distance from back bumper to target was 16 meters (52.5 feet)

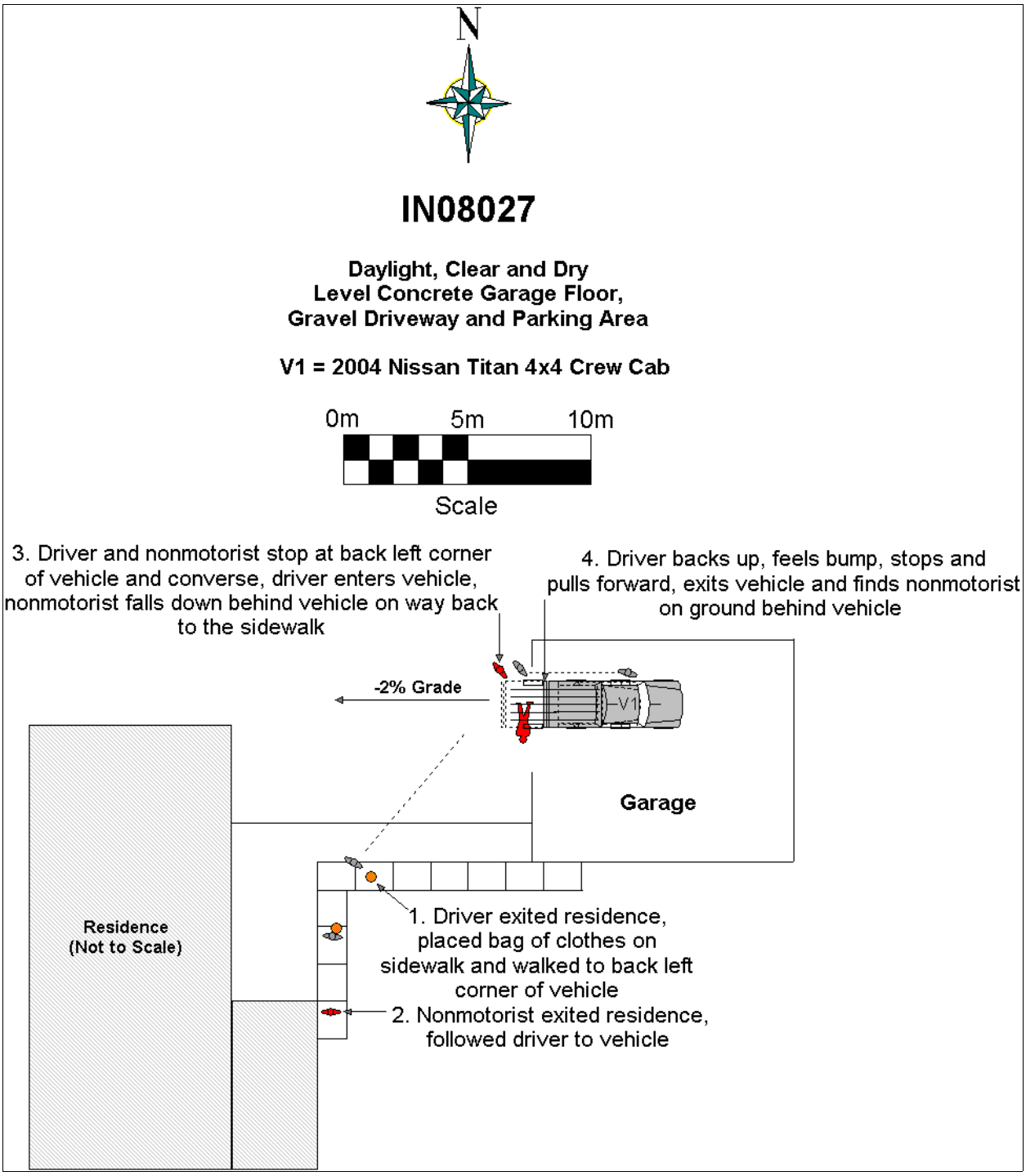
NONMOTORIST

The nonmotorist was a 64-year-old, female, 170 centimeters (67 inches) tall and weighed 77 kilograms (170 pounds). She was wearing a white short sleeve shirt, blue jeans, and unknown color and type of shoes.

NONMOTORIST INJURIES

The nonmotorist's injuries and injury sources based on the driver's interview and information from the police crash report are shown in the table below.

Injury Number	Injury Description (including Aspect)	NASS Injury Code & AIS 90	Injury Source	Source Confidence	Source of Injury Data
1	Ruptured {split} liver, with severe internal bleeding, not further specified	severe 541840.4,1	Tire, right rear	Certain	Interviewee (relative)
2	Abrasion elbow, not further specified	minor 790202.1,9	Ground	Probable	Police Crash Report
3	Trauma, blunt abdominal, not further specified	unknown 515099.7,0	Tire, right rear	Certain	Police Crash Report


N
IN08027
Daylight, Clear and Dry
Level Concrete Garage Floor,
Gravel Driveway and Parking Area
V1 = 2004 Nissan Titan 4x4 Crew Cab
0m
5m
10m
Scale
3. Driver and nonmotorist stop at back left corner of vehicle and converse, driver enters vehicle, nonmotorist falls down behind vehicle on way back to the sidewalk
4. Driver backs up, feels bump, stops and pulls forward, exits vehicle and finds nonmotorist on ground behind vehicle
-2% Grade
V1
Garage
Residence
(Not to Scale)
1. Driver exited residence, placed bag of clothes on sidewalk and walked to back left corner of vehicle
2. Nonmotorist exited residence, followed driver to vehicle

IN08027

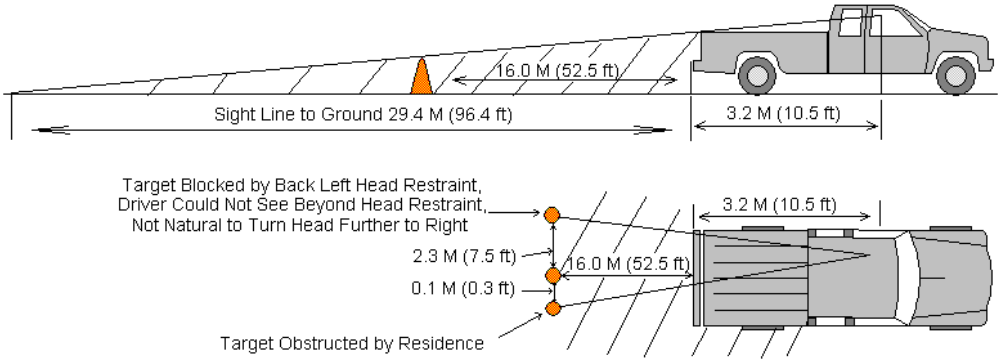
Nominal Visibility Diagram
2004 Nissan Titan 4x4 Crew Cab

Driver's Eye Height From Ground = 162 cm (63.8 in)

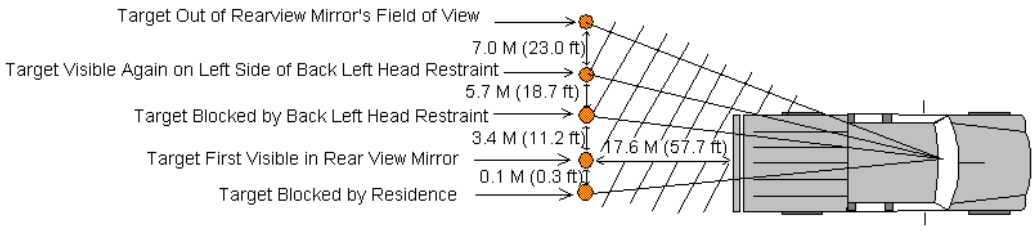
= Nissan Blind Zones

= 71 cm (28 in) High Target

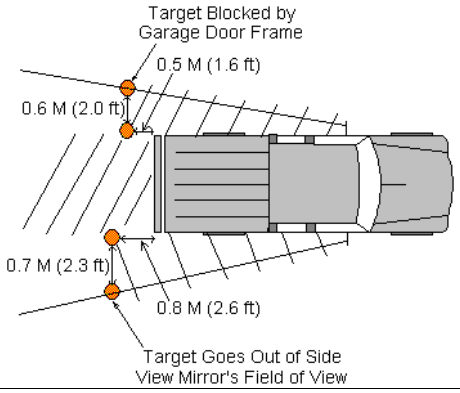
1. Distance Back of Nissan To Point a 71 cm (28 in) High Reference Target Comes Into Driver's View as He Looks Over Right Shoulder Out of Backlight



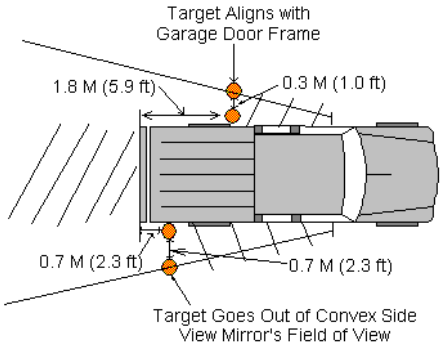
2. Rearview Mirror Blind Zone



3. Side View Mirrors Blind Zones



4. Convex Side View Mirrors Blind Zones



Not Applicable ☐

Reset Values | Print Forms

U.S. Department of Transportation
National Highway Traffic Safety Administration

SCENE FORM

Special Crash Investigations
Not In Traffic Surveillance

1. Case Number

I N 0 8 0 2 7

IDENTIFICATION

2. Date of Crash 0 6 / x x / 0 8

3. Time of Crash 1 5 2 1

Code reported military time of crash.

NOTE: Midnight = 2400
Unknown = 9999

AMBIENT CONDITIONS

4. Light Conditions

- ◉ Daylight
- ☐ Dark
- ☐ Dark but lighted
- ☐ Dawn
- ☐ Dusk
- ☐ Unknown

5. Atmospheric Conditions
(*Select all that apply)*

- ◉ Clear-No adverse conditions
- ☐ Cloudy
- ☐ Rain
- ☐ Snow
- ☐ Fog, Smog, Smoke
- ☐ Sleet, Hail (freezing rain or drizzle)
- ☐ Blowing Snow
- ☐ Severe Crosswinds
- ☐ Blowing Sand, Soil, Dirt
- ☐ Other (specify):_____
- ☐ Unknown

6. Temperature

- ☐ Below 0 degrees Celsius (Below 32 F)
- ☐ 1-10 degrees Celsius (33-50 F)
- ☐ >10-24 degrees Celsius (51-75 F)
- ◉ Over 24 degrees Celsius (Over 75 F)
- ☐ Unknown

SCENE INFORMATION

7. Type of area in which crash occurred
(*Select all that apply)*

- ◉ Single family residential
- ☐ Row houses/townhouses
- ☐ Multi family housing
- ☐ Commercial
- ☐ Industrial
- ☐ Rural
- ☐ Unknown

8. Driver exterior sightline obstructions
(*Select all that apply)*

- ☐ None
- ☐ Other vehicles
- ◉ Building
- ☐ Trees
- ☐ Shrubbery
- ☐ Other (specify)_____
- ☐ Utility poles
- ☐ Signs
- ☐ Glare
- ☐ Unknown
- ☐ No driver present

9. Crash location

- ◉ Driveway
- ☐ Parking Lot
- ☐ Sidewalk
- ☐ Alley
- ☐ Intersection of driveway and sidewalk
- ☐ Road / street
- ☐ Roadside / shoulder
- ☐ Other (specify)_____
- ☐ Unknown

10. Non motorist sightline obstructions
(*Select all that apply)*

- ◉ None
- ☐ Other vehicles
- ☐ Building
- ☐ Trees
- ☐ Shrubbery
- ☐ Utility poles
- ☐ Signs
- ☐ Glare
- ☐ Other (specify) _____
- ☐ Unknown

11. Grade at parked position + / - 0 0 %

12. Estimated distance from parked position to impact

0 0 1 . 7 m

13. Estimated speed at impact 0 0 2 kmph

14. Grade at impact +/ - - 0 2 %

15. Estimated distance from impact to vehicle final rest

0 0 1 . 7 m

Unknown = 999 Reference Items 11,12, 13, 14, 15

Not Applicable ☐

Reset Values

U.S. Department of Transportation
National Highway Traffic Safety Administration

VEHICLE FORM

Special Crash Investigations
Not In Traffic Surveillance

1. Case Number I N 0 8 0 2 7

VEHICLE IDENTIFICATION

2. VIN 1 N 6 A A 0 7 B 5 4 N X X X X X X

3. Model Year 2 0 0 4

4. Vehicle Make (specify): Nissan

5. Vehicle Model (specify): Titan 4x4 Crew Cab

GLAZING

Location	Presence (check)	Status (select)	Clarity (select)	Tint (check)	Glazing Obstructions (specify if present)
Windshield	☑	☑ Fixed / ☐ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☑ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☐	
LF	☑	☐ Fixed / ☑ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☑ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☐	
RF	☑	☐ Fixed / ☑ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☑ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☐	
2nd Left	☑	☐ Fixed / ☑ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☑ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☑	
2nd Right	☑	☐ Fixed / ☑ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☑ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☑	
3rd Left	☐	☐ Fixed / ☐ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☐ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☐	
3rd Right	☐	☐ Fixed / ☐ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☐ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☐	
Backlight	☑	☐ Fixed / ☑ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☑ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☑	
Left Backlight	☑	☑ Fixed / ☐ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☑ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☑	
Right Backlight	☐	☑ Fixed / ☐ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☑ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☑	
Roof	☐	☐ Fixed / ☐ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☐ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☐	
Other (specify)	☐	☐ Fixed / ☐ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☐ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☐	

TIRE DATA

6. Vehicle Manufacturer Recommended Tire Size P285/70R17

7. LF Tire Size P285/70R17

8. LR Tire Size P285/70R17

9. RF Tire Size P285/70R17

10. RR Tire Size P285/70R17

Seats / Head Restraint Data

Seat Position	Seat Type (Select from below)	Head Restraint (Check if available)	Head Restraint Adjustment (select)	NOTES:
Front Left	1	☑	☑ Full Down / ☐ Mid / ☐ Full Up	
Front Middle	0	☐	☐ Full Down / ☐ Mid / ☐ Full Up	
Front Right	1	☑	☑ Full Down / ☐ Mid / ☐ Full Up	
2nd Left	4	☑	☑ Full Down / ☐ Mid / ☐ Full Up	
2nd Middle	4	☐	☐ Full Down / ☐ Mid / ☐ Full Up	
2nd Right	4	☑	☑ Full Down / ☐ Mid / ☐ Full Up	
3rd Left	0	☐	☐ Full Down / ☐ Mid / ☐ Full Up	
3rd Middle	0	☐	☐ Full Down / ☐ Mid / ☐ Full Up	
3rd Right	0	☐	☐ Full Down / ☐ Mid / ☐ Full Up	

Seat Type codes:

0 = No seat or seat folded down
1 = Bucket
2 = Bucket w/ folding back
3 = Bench
4 = Bench with folding back cushions
5 = Bench w/ folding back
6 = Split bench w/ separate back cushions
7 = Split bench w/ separate folding back
8 = Pedestal (i.e. column supported)
9 = Box mounted (i.e. van type)
10= Other seat type (specify)
99= Unknown seat type

VEHICLE MEASUREMENTS

Clearance Heights		Measurements (all from ground, and in centimeters	NOTES
Beltline		129	
Top of trunk/tailgate		141	
Bottom of bumper		55	
Trailer hitch (if applicable)		41	
Undercarriage			
	Sway bar	N/A	
	Axle	35	
	Differential	25	
	Other (specify): Shock	29	
Sensor Height (if equipped)		71	
Camera Height (if equipped)		N/A	

Not Applicable ☐

Reset Values

U.S. Department of Transportation
National Highway Traffic Safety Administration

Back Up / Parking Aid Form

Special Crash Investigations
Not In Traffic Surveillance

1. Case Number

I N 0 8 0 2 7

PARKING AID PRESENCE

2. Type of backing/parking aid present

- ☐ OEM camera
- ☑ OEM ultrasonic/radar sensor
- ☐ OEM combination camera-ultrasonic/radar sensor
- ☐ OEM Fresnel lens
- ☐ OEM interior mirrors
- ☐ Aftermarket camera
- ☐ Aftermarket ultrasonic/radar sensor
- ☐ Aftermarket combination camera-ultrasonic radar sensor
- ☐ Aftermarket Fresnel lens
- ☐ Aftermarket interior mirrors
- ☐ Other (specify): _____

CAMERA INFORMATION

Specify field of view measurements on diagram

3. System make/model

Not equipped

4. Video monitor type

- ☑ None present
- ☐ LCD (color)
- ☐ CRT (black & white)
- ☐ Unknown

5. Video display size *(Diagonal)* N/A cm

6. Camera location

- ☑ None present
- ☐ Bumper
- ☐ License plate
- ☐ Tailgate/Hatch/Trunk
- ☐ Other (specify): _____

7. Video image quality under scene lighting conditions

- ☑ None present
- ☐ Good
- ☐ Average
- ☐ Poor (specify): _____
- ☐ Unknown

8. Was the camera functioning properly

- ☑ None present
- ☐ Yes
- ☐ No, poor image quality due to glare
- ☐ No, poor image quality due to atmospheric conditions
- ☐ No, camera turned off
- ☐ No, camera inoperable
- ☐ Unknown

ULTRASONIC/RADAR SENSOR

Specify object detection range on diagram

9. System make/model

Nissan Rear Sonar System

10. Auditory warning illumination

- ☐ No sensor present
- ☐ Yes
- ☑ No
- ☐ Unknown

11. Number of sensors 4

12. Sensor locations *(Select all that apply)*

- ☐ No sensor present
- ☑ Left bumper
- ☐ Center bumper
- ☑ Right bumper
- ☐ License plate area
- ☐ Tailgate/Hatch/Trunk

13. Was warning system functioning properly

- ☐ No sensor present
- ☐ Yes, system alerted driver
- ☑ No, system did not alert driver
- ☐ No, system turned off
- ☐ No, system inoperable
- ☐ Unknown

14. Did driver react to warning

The warning did not sound

- ☐ No sensor present
- ☐ Yes
- ☒ No
- ☐ Unknown

15. Did driver report common false warnings

- ☐ No sensor present
- ☐ Yes
- ☒ No
- ☐ Unknown

No Driver Present ☐

Reset Values

U.S. Department of Transportation
National Highway Traffic Safety Administration

DRIVER FORM

Special Crash Investigations
Not In Traffic Surveillance

1. Case Number

I N 0 8 0 2 7

DRIVER PROFILE

2. Driver's Age 7 4
99 = Unknown

3. Driver's Sex
- ☉ Male
- ☐ Female
- ☐ Unknown

4. Driver's Height 1 7 8 cm
999 = Unknown

5. Driver's Weight 1 0 9 kg
999 = Unknown

6. Driver eyewear worn
(Select all that apply)
- ☐ None
- ☉ Eyeglasses
- ☐ Sunglasses
- ☐ Contacts
- ☐ Unknown

7. Driver vision deficiency condition
(Select all that apply)
- ☐ None
- ☉ Near sighted
- ☐ Far sighted
- ☐ Astigmatism
- ☐ Other (specify) _____
- ☐ Unknown

8. Non motorist's relationship to driver
- ☐ No relationship
- ☐ Child
- ☐ Grandchild
- ☐ Sibling
- ☐ Neighbor
- ☐ Friend
- ☉ Other (specify): Wife
- ☐ Unknown

DRIVER ACTIONS

9. Driver approach to vehicle for entry
- ☐ From left front
- ☐ From left
- ☉ From left rear
- ☐ From right rear
- ☐ From right front
- ☐ Circled vehicle
- ☐ Return trip (backing into driveway/lot)
- ☐ Other (specify): _____
- ☐ N/A
- ☐ Unknown

10. Driver entry interruption
(Select all that apply)
- ☐ Direct trip from building to vehicle
- ☐ Loaded items into vehicle
- ☐ Spoke with family
- ☐ Spoke with neighbors
- ☉ Spoke with contacted nonmotorist
- ☐ Return trip (backing into driveway/lot)
- ☐ Other (specify): _____
- ☐ N/A
- ☐ Unknown

11. Purpose of backing
- ☐ Leaving parking space in parking lot
- ☐ Backing onto roadway from driveway
- ☐ Entering parking space in parking lot
- ☐ Backing into driveway from roadway
- ☉ Other (specify): Backing out of garage
- ☐ N/A
- ☐ Unknown

12. Where was driver going
Description:

Pick up bag of cloths take them to charity

13. Driver in a hurry
- ☐ Yes
- ☉ No
- ☐ N/A
- ☐ Unknown

14. How did driver check behind (rear area of vehicle) after vehicle entry
(Select all that apply)
- ☐ Did not look
- ☉ Checked mirrors
- ☐ Turned right and looked back
- ☐ Turned left and looked back
- ☐ Viewed Camera
- ☐ Listened for auditory/visual warning from system
- ☐ Other (specify): _____
- ☐ N/A
- ☐ Unknown

15. Estimated time between vehicle entry and start of backing
- ☉ 0-10 Seconds
- ☐ 11-30 Seconds
- ☐ 31-60 Seconds
- ☐ Over 60 Seconds
- ☐ N/A
- ☐ Unknown

16. What direction was the driver looking during backing maneuver
(Select all that apply)

- ☐ Straight ahead
- ☐ Right
- ☐ Left
- ☐ Rearward
- ☐ At object inside the car
- ☉ At mirrors
- ☐ Other (specify): _____
- ☐ N/A
- ☐ Unknown

17. Was the driver distracted during back up maneuver
(Select all that apply)

- ☉ No non-driving activities

External

- ☐ Looking at other vehicles
- ☐ Looking at other non motorist
- ☐ Looking at intended turn destination
- ☐ External focus, not specified
- ☐ Other external focus (specify): _____

Internal

- ☐ Looking at other occupant
- ☐ Talking to passenger
- ☐ Dialing phone
- ☐ Talking on phone
- ☐ Listening to radio/cd/portable playback device
- ☐ Adjusting radio/cd player
- ☐ Adjusting climate controls
- ☐ Using a device/controls integral to vehicle (specify): _____
- ☐ Reading/adjusting navigation system
- ☐ Eating or drinking
- ☐ Smoking related
- ☐ Retrieving fallen object (specify): _____
- ☐ Internal focus, not specified
- ☐ Focused on other internal object (specify): _____
- ☐ N/A
- ☐ Unknown

18. Driver avoidance actions prior to impact
(Select all that apply)

- ☉ None
- ☐ Braking
- ☐ Steering left
- ☐ Steering right
- ☐ Accelerating
- ☐ Other (specify): _____
- ☐ N/A
- ☐ Unknown

19. Did driver see struck non motorist prior to impact
(Select all that apply)

- ☐ No, never saw non motorist
- ☉ Saw non motorist prior to entering vehicle
- ☐ Saw non motorist after entering vehicle
- ☐ Other (specify): _____
- ☐ N/A ☐ Unknown

20. Est time between start of backing and impact

- ☐ <2 or = 1 second
- ☉ 2-5 seconds
- ☐ 6-10 seconds
- ☐ > 10 seconds
- ☐ N/A ☐ Unknown

21. Driver interior sightline obstructions
(Select all that apply)

- ☐ Pillar
- ☉ Headrest
- ☐ Cargo
- ☐ Other occupant
- ☐ Other (specify) _____
- ☐ Unknown
- ☐ None

22. Recent experience driving this vehicle

- ☉ More than 10 times the last three months
- ☐ 6-10 times the last three months
- ☐ 2-5 times the last three months
- ☐ Less than 2 times the last three months
- ☐ First time driving this vehicle
- ☐ N/A
- ☐ Unknown

23. Frequency of driving in this parking lot/driveway

- ☉ Daily
- ☐ Weekly
- ☐ Several times a month
- ☐ Monthly
- ☐ Rarely
- ☐ First time in lot/driveway
- ☐ N/A ☐ Unknown

24. Driver Impairment
(Select all that apply)

- ☉ No drugs or alcohol present
- ☐ Alcohol present (specify BAC): _____
- ☐ Drugs present (specify):_____
- ☐ Unknown

25. Source of alcohol/drug results

- ☐ Police reported
- ☐ Medical record
- ☐ Other (specify)_____
- ☉ Not Tested
- ☐ Unknown if tested

Not Applicable ☐

U.S. Department of Transportation
National Highway Traffic Safety Administration

Non Motorist Form

Reset Values

Special Crash Investigations
Not In Traffic Surveillance

1. Case Number
I N 0 8 0 2 7

NON-MOTORIST PROFILE

2. Non-motorist's Age — 6 4 ☐ Months ☉ Years
99 = Unknown

3. Non-motorist's Sex
☐ Male
☉ Female
☐ Unknown

4. Non-motorist's Height — 1 7 0 cm
999 = Unknown

5. Non-motorist's Weight — 0 7 7 kg
999 = Unknown

6. Medical outcome

☐ Not injured
☐ ER only
☐ Hospitalized 1-4 days
☐ Hospitalized 5 days or more
☐ Treatment later
☉ Fatal
☐ Unknown

7. Source of most severe injury
☐ Bumper
☉ Tire
☐ Undercarriage
☐ Other Specify:_____
☐ Ground
☐ N/A
☐ Unknown

8. Non-motorist impairment
(Select all that apply)
☉ No drugs or alcohol present
☐ Positive for alcohol (specify BAC): _____
☐ Positive for drugs (specify): _____
☐ Unknown

9. Source of alcohol/drug results
☐ Police reported
☐ Medical Report
☐ Other (specify) _____
☉ Not Tested
☐ Unknown if tested

NON-MOTORIST ACTIONS

10. Non-motorist attitude

☐ Standing
☐ Bending at waist
☐ Sitting
☐ Crouching
☐ Kneeling
☐ On skates/skateboard
☐ On bike/scooter
☉ Other (specify) Fell down
☐ Unknown

11. Non-motorist motion

☐ Not moving
☐ Walking slowly
☐ Walking rapidly
☐ Running or jogging
☐ Skipping/Hopping/Jumping
☉ Falling/Stumbling/Rising
☐ On skates/skateboard
☐ On bike/scooter
☐ Other (specify): _____
☐ Unknown

12. Non-motorist approach relative to rear of vehicle

☐ Stationary
☉ From left
☐ From right
☐ From behind
☐ Other (specify): _____
☐ Unknown

13. Non-motorist first avoidance action

☐ No avoidance actions
☐ Stopped
☐ Accelerated pace
☐ Ran away (along vehicle path)
☐ Jumped
☐ Turned away from vehicle
☐ Turned toward vehicle and braced
☐ Dove or fell away from vehicle
☐ Other (specify): _____
☉ Unknown

14. Non-motorist primary focus of attention

☉ Striking vehicle
☐ Play object
☐ Person
☐ Surrounding traffic
☐ Animal
☐ Handheld electronic (phone, MP3 player, etc.)
☐ Other Object (specify) _____
☐ Unknown

15. Were any other Non-motorists present?
(Select all that apply)

☉ Alone
☐ One adult present
☐ One other child present
☐ Multiple adults present
☐ Multiple children present
☐ Unknown

NON MOTORIST CLOTHING

NOTES:

- Specify Color, Fabric and Texture/Weight for outermost layer only
- Indicate "*NONE*" if applicable
- Available codes:

Colors		***Fabrics***	***Textures***	***Weights***
Black	Charcoal gray	Natural	Soft	Heavy
Lt gray/silver	Brown	Synthetic	Slick	Medium
Gold/tan	Purple	Blend	Coarse	Light
Dark blue	Light blue			
Dark green	Light green			
Maroon	Red			
Orange	Yellow			
White	Other (specify)			
Pink				

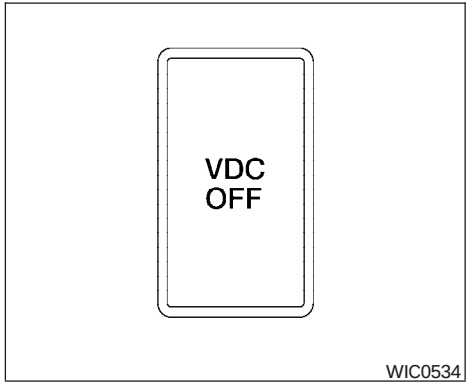
	Clothing	Color	Fabric	Texture	Weight
HEADWEAR	Hat				
	Helmet				
	Hood				
	Other (specify): _____				
	Unknown				
UPPER BODY	Short Sleeve	White	Natural	Soft	Light
	Long Sleeve				
	Light Jacket				
	Heavy Jacket				
	Other (Specify): _____				
	Unknown				
LOWER BODY	Shorts				
	Pants	Light blue	Natural	Soft	Medium
	Shoes	Unknown	Unknown	Unknown	Unknown
	Other (specify): _____				
	Unknown				

3. When the seat is warmed or before you leave the vehicle, be sure to turn the switch off.

⚠CAUTION

- **Do not use the seat heater for extended periods or when no one is using the seat.**
- **Do not put anything on the seat which insulates heat, such as a blanket, cushion, seat cover, etc. Otherwise, the seat may become overheated.**
- **Do not place anything hard or heavy on the seat or pierce it with a pin or similar object. This may result in damage to the heater.**
- **Any liquid spilled on the heated seat should be removed immediately with a dry cloth.**
- **When cleaning the seat, never use gasoline, benzine, thinner, or any similar materials.**
- **If any abnormalities are found or the heated seat does not operate, turn the switch off and have the system checked by your NISSAN dealer.**
- **The battery could run down if the seat heater is operated while the engine is not running.**

VEHICLE DYNAMIC CONTROL (VDC) OFF SWITCH (if so equipped)



WIC0534

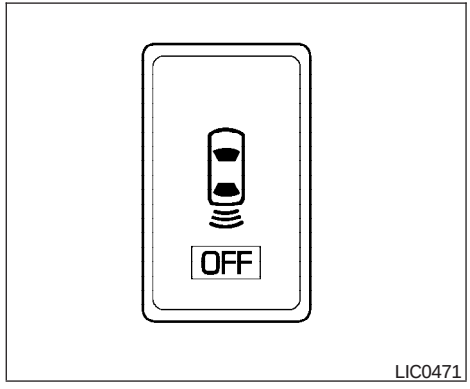
The vehicle should be driven with the Vehicle Dynamic Control (VDC) system on for most driving conditions.

If the vehicle is stuck in mud or snow, the VDC system reduces the engine output to reduce wheel spin. The engine speed will be reduced even if the accelerator is depressed to the floor. If maximum engine power is needed to free a stuck vehicle, turn the VDC system off.

To turn off the VDC system, push the VDC OFF switch. The VDC OFF indicator will come on.

Push the VDC OFF switch again or restart the engine and the system will operate normally. See “Vehicle dynamic control (VDC) system” in the “Starting and driving” section.

REAR SONAR SYSTEM OFF SWITCH (if so equipped)



LIC0471

⚠WARNING

The rear sonar system is a convenience but it is not a substitute for proper backing. Always turn and check that it is safe to do so before backing up. Always back up slowly.

The rear sonar system is active when the ignition is in the ON position and the shift selector lever is in R (Reverse).

When sensors detect obstacles within 6 ft (1.8 m) of the rear bumper, a beeping tone is emitted.

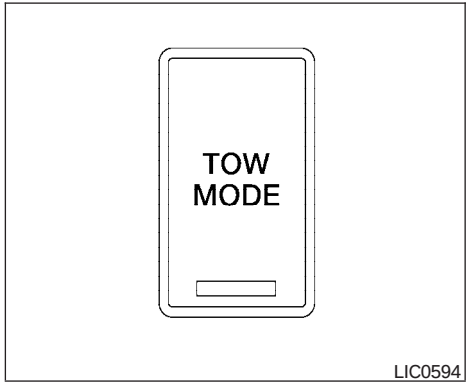
The rear sonar system can be disabled by pushing the OFF switch. When the system is disabled,

the indicator light on the switch will illuminate. Push the switch again to enable the system. The indicator light will go off.

The system will automatically reset the next time the ignition switch is turned on.

See “Rear sonar system” in the “Starting and driving” section.

TOW MODE SWITCH



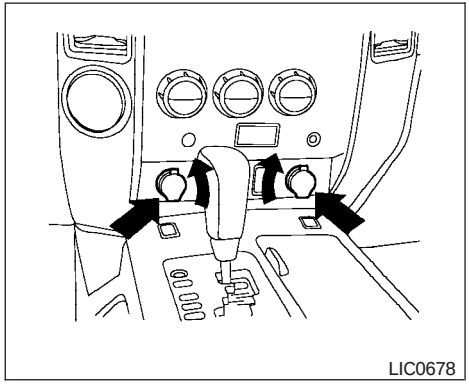
Tow mode should be used when pulling a heavy trailer or hauling a heavy load. Using tow mode at other times may cause unnecessary transmission shifting and reduced fuel economy.

Press the tow mode switch to activate tow mode. The indicator light on the tow mode switch illuminates when tow mode is selected. Press the tow mode switch again to turn tow mode OFF.

Tow mode is automatically canceled when the key is turned OFF.

For additional information, refer to “Tow mode” in the “Technical and consumer information” section later in this manual.

POWER OUTLET



Front row

The power outlets are for powering electrical accessories such as cellular telephones.

The power outlets located on the driver’s side of the instrument panel and in the truck box are powered directly by the vehicle’s battery.

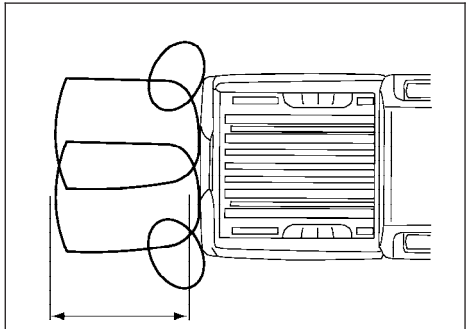
The power outlets located on the passenger’s side of the instrument panel, inside the center armrest, and in the 2nd row are powered only when the ignition key is in the ACC or ON position.

Open the cap to use a power outlet.

⚠WARNING

- **The vehicle dynamic control system is designed to help improve driving stability but does not prevent accidents due to abrupt steering operation at high speeds or by careless or dangerous driving techniques. Reduce vehicle speed and be especially careful when driving and cornering on slippery surfaces and always drive carefully.**
- **If brake related parts such as brake pads, rotors and calipers are not standard equipment or are extremely deteriorated, the vehicle dynamic control system may not operate properly and the vehicle dynamic control off indicator light may come on.**
- **Do not modify the vehicle's suspension. If suspension parts such as shock absorbers, struts, springs, stabilizer bars and bushings are not NISSAN approved for your vehicle or are extremely deteriorated the vehicle dynamic control system may not operate properly. This could adversely affect vehicle handling performance, and the vehicle dynamic control off indicator light may come on.**
- **When driving on extremely inclined surfaces such as higher banked corners, the vehicle dynamic control system may not operate properly and the vehicle dynamic control off indicator light may come on. Do not drive on these types of roads.**
- **If wheels or tires other than the recommended ones are used, the vehicle dynamic control system may not operate properly and the vehicle dynamic control off indicator light may come on.**
- **The vehicle dynamic control system is not a substitute for winter tires or tire chains on a snow covered road.**

REAR SONAR SYSTEM (if so equipped)


WSD0103

⚠WARNING

- **Always turn and look back before backing. The RSS is not a substitute for proper backing procedures.**
- **Read and understand the limitations of the rear sonar system as contained in this section. Inclement weather may affect the function of the RSS; this may include reduced performance or a false activation.**
- **This system is not designed to prevent contact with small or moving objects.**

- **The system is designed as an aid to the driver in detecting large stationary objects to help avoid damaging the vehicle. The system will not detect small objects below the bumper, and may not detect objects close to the bumper or on the ground.**
- **If your vehicle sustains damage to the rear bumper fascia, leaving it misaligned or bent, the sensing zone may be altered causing inaccurate measurement of obstacles or false alarms.**

The Rear Sonar System (RSS) sounds a tone to warn the driver of obstacles near the rear bumper when R (Reverse) is selected. The system may not detect objects at speeds above 3 mph (5 km/h) and may not detect certain angular or moving objects.

The RSS detects obstacles up to 6 ft. (1.8 meters) from the rear bumper with a decreased coverage area at the outer corners of the bumper, (refer to the illustration for approximate zone coverage areas). As you move closer to the obstacle, the rate of the tone increases. When the obstacle is less than 10 in. (25.0 cm) away, the tone will sound continuously. If the RSS detects a stationary or receding object further than 10 in. (25.0 cm) from the side of the vehicle, the tone will sound for only three seconds. Once the system detects an object approaching, the tone will sound again.

The RSS automatically turns on when the gear selector is placed in R (Reverse) and the ignition is ON. The RSS OFF switch on the instrument panel allows the driver to turn the RSS on and off. To turn the RSS off, the ignition must be ON, and the gear selector in R (Reverse). An indicator light on the switch will illuminate when the system is turned off. If the indicator light illuminates when the RSS is not turned off, it may indicate a failure in the RSS.

Keep the RSS sensors (located on the rear bumper fascia) free from snow, ice and large accumulations of dirt (do not clean the sensors with sharp objects). If the sensors are covered, it will affect the accuracy of the RSS.

FREEING A FROZEN DOOR LOCK

To prevent a door lock from freezing, apply deicer through the key hole. If the lock becomes frozen, heat the key before inserting it into the key hole.

ANTI-FREEZE

In the winter when it is anticipated that the temperature will drop below 32°F (0°C), check the anti-freeze to assure proper winter protection. For details, see ''Engine cooling system'' in the ''Maintenance and do-it-yourself'' section of this manual.

BATTERY

If the battery is not fully charged during extremely cold weather conditions, the battery fluid may freeze and damage the battery. To maintain maximum efficiency, the battery should be checked regularly. For details, see ''Battery'' in the ''Maintenance and do-it-yourself'' section of this manual.

DRAINING OF COOLANT WATER

If the vehicle is to be left outside without anti-freeze, drain the cooling system, including the engine block. Refill before operating the vehicle.