

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

LABORATORY TEST PROCEDURE

FOR

FMVSS No. 206

Door Locks and Door Retention Components

Inertial Load Sled Test



U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Enforcement
Office of Vehicle Safety Compliance
Mail Code: NVS-220, W43-481
1200 New Jersey Avenue, SE
Washington, DC 20590

**OVSC TEST PROCEDURE TP-206I-01
TABLE OF CONTENTS**

	PAGE
1. PURPOSE AND APPLICATION	1
2. GENERAL REQUIREMENTS	3
3. SECURITY	5
4. GOOD HOUSEKEEPING	5
5. TEST SCHEDULING AND MONITORING.....	5
6. TEST DATA DISPOSITION	6
7. GOVERNMENT FURNISHED PROPERTY (GFP)	8
8. CALIBRATION OF TEST INSTRUMENTS	9
9. PHOTOGRAPHIC DOCUMENTATION	11
10. DEFINITIONS	17
11. PRETEST REQUIREMENTS.....	19
12. COMPLIANCE TEST EXECUTION	21
13. POST TEST REQUIREMENTS	31
14. REPORTS	32
14.1. MONTHLY STATUS REPORTS	32
14.2. APPARENT TEST FAILURE	32
14.3. FINAL TEST REPORTS.....	32
14.3.1. COPIES	32
14.3.2. REQUIREMENTS	33
14.3.3. FIRST THREE PAGES.....	33
14.3.4. TABLE OF CONTENTS.....	39
15. REPORT SECTIONS and DATA SHEETS.....	40
16. FORMS	69

**REVISION CONTROL LOG
FOR OVSC LABORATORY
TEST PROCEDURES**

TP-206I

TEST PROCEDURE		FMVSS 206		DESCRIPTION
REV. No.	DATE	AMENDMENT	EFFECTIVE DATE	
00	2/6/07	72FR5385	September 1, 2009	This procedure deals specifically with the inertial load test requirements of FMVSS No. 206.
01	2/19/10	75FR7370	February 19, 2010	Minor revisions, update standardized format, and updating of applicability per amendment.
02				
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				

1. PURPOSE AND APPLICATION

This document is provided by the National Highway Traffic Safety Administration (NHTSA), Office of Vehicle Safety Compliance (OVSC) for the purpose of presenting procedures for uniform testing and providing suggestions for the use of specific equipment for contracted testing laboratories. It contains requirements based on the test procedures specified in the Federal Motor Vehicle Safety Standard(s) (FMVSS) and any applicable safety Regulations. The OVSC test procedures include requirements that are general in scope to provide flexibility for contracted laboratories to perform compliance testing and are not intended to limit or restrain a contractor from developing or utilizing any testing techniques or equipment which will assist in procuring the required compliance test data. These test procedures do not constitute an endorsement or recommendation for use of any particular product or testing method.

Prior to conducting compliance testing, contracted laboratories are required to submit a detailed test procedure to the Contracting Officer's Technical Representative (COTR) to demonstrate concurrence with the OVSC laboratory test procedure and the applicable FMVSS. If any contractor views any part of an OVSC laboratory test procedure to be in conflict with a FMVSS or observes deficiencies in a laboratory test procedure, the contractor is required to advise the COTR and resolve the discrepancy prior to the start of compliance testing or as soon as practicable. The contractor's test procedure must include a step-by-step description of the methodology and detailed check-off sheets. Detailed check-off sheets shall also be provided for the testing instrumentation including a complete listing of the test equipment with make and model numbers. The list of test equipment shall include instrument accuracy and calibration dates. All equipment shall be calibrated in accordance with the manufacturer's instructions. There shall be no contradictions between the laboratory test procedure and the contractor's in-house test procedure. Written approval of the in-house test procedures shall be obtained from the COTR before initiating the compliance test program.

NOTE: The OVSC Laboratory Test Procedures, prepared for the limited purpose of use by independent laboratories under contract to conduct compliance tests for the OVSC, are not rules, regulations or NHTSA interpretations regarding the meaning of a FMVSS. The laboratory test procedures are not intended to limit the requirements of the applicable FMVSS(s). In some cases, the OVSC laboratory test procedures do not include all of the various FMVSS minimum performance requirements. In addition, the laboratory test procedures may specify test conditions that are less severe than the minimum requirements of the standard. The laboratory test procedures may be modified by the OVSC at any time without notice, and the COTR may direct or authorize contractors to deviate from these procedures, as long as the tests are performed in a manner consistent with the standard itself and within the scope of the contract. Laboratory test procedures may not be relied upon to create any right or benefit in any person. Therefore, compliance of a vehicle or item of

1. PURPOSE AND APPLICATION.....Continued

motor vehicle equipment is not necessarily guaranteed if the manufacturer limits its certification tests to those described in the OVSC laboratory test procedures.

2. GENERAL REQUIREMENTS

Federal Motor Vehicle Safety Standard (FMVSS) No. 206 establishes minimum performance requirements for motor vehicle door locks and door retention components. The purpose of FMVSS No. 206 is to minimize the likelihood of occupants being thrown from a vehicle as a result of impact. The standard applies to all side and back doors on passenger cars, multipurpose passenger vehicles, and trucks, and buses with a gross vehicle weight rating (GVWR) of 4,536 kg or less, that lead directly into a compartment that contains one or more seating accommodations and the associated door components. The standard does not apply to folding doors, roll-up doors, detachable doors, bus doors used only for emergency egress purposes and labeled accordingly and on bus doors to accommodate a permanently attached wheelchair lift system that when the device is in the retracted position, the lift platform retracts to a vertical orientation parallel to and in close proximity with the interior surface of the lift door and in that position, the platform completely covers the doorway opening, has fixed attachments to the vehicle and provides a barricade to the doorway. The bus wheelchair lift door must be linked to an alarm system consisting of either a flashing visible signal located in the driver's compartment or an alarm audible to the driver that is activated when the door is not fully closed and the vehicle ignition is activated.

The TP-206I-01 procedure specifically provides requirements for compliance testing of motor vehicle hinged doors (side and back) and sliding side doors to the inertial load test requirements of FMVSS No. 206. The inertial load requirements for hinged doors and sliding side doors apply to each motor vehicle door latch system, including primary and auxiliary door latches. Table (1) below summarizes the inertial load test procedure requirements specified in FMVSS No. 206.

Dynamic Acceleration Test	Inertial Load Pulse	FMVSS 206 Section	Test Procedure Section
Vehicle	30g for 30 msec per pulse corridor	S5.1.1.4(b)(1) S5.1.1.4(b)(3)	12.1
Door Only	30g for 30 msec per pulse corridor	S5.1.1.4(b)(2) S5.1.1.4(b)(3)	12.2

Table (1). FMVSS No. 206 Inertial Load Test Requirements

METRIC SYSTEM OF MEASUREMENT

Section 5164 of the Omnibus Trade and Competitiveness Act (Pub. L. 100-418) establishes that the metric system of measurement is the preferred system of weights and measures for trade and commerce in the United States. Executive order 12770 directs Federal agencies to comply with the Act by converting regulatory standards to

2. GENERAL REQUIREMENTS.....Continued

the metric system after September 30, 1992. In a final rule published on March 15, 1990 (60 FR 13639), NHTSA completed the first phase of metrication, converting English measurements in several regulatory standards to the metric system. Since then, metrication has been applied to other regulatory standards (63 FR 28912).

Accordingly, the OVSC laboratory test procedures include revisions to comply with governmental directives in using the metric system. Regulatory standards converted to metric units are required to use metric measurements in the test procedures, whereas standards using English units are allowed to use English measurements or to use English measurements in combination with metric equivalents in parentheses.

All final compliance test reports are required to include metric measurements for standards using metrication.

NOTE: The methodology for rounding measurement in the test reports shall be made in accordance with ASTM E29-06b, "Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications."

3. SECURITY

The contractor shall provide appropriate security measures to protect the OVSC test vehicles and Government Furnished Property (GFP) from unauthorized personnel during the entire compliance testing program. The contractor is financially responsible for any acts of theft and/or vandalism which occur during the storage of test vehicles and GFP. Any security problems which arise shall be reported by telephone to the Industrial Property Manager (IPM), Office of Acquisition Management, within two working days after the incident. A letter containing specific details of the security problem shall be sent to the IPM (with copy to the COTR) within 48 hours.

The contractor shall protect and segregate the data that evolves from compliance testing before and after each vehicle test. No information concerning the vehicle safety compliance testing program shall be released to anyone except the COTR, unless specifically authorized by the COTR or the COTR's Division Chief.

NOTE: No individuals, other than contractor personnel directly involved in the compliance testing program or OVSC personnel, shall be allowed to witness any vehicle or equipment item compliance test or test dummy calibration unless specifically authorized by the COTR.

4. GOOD HOUSEKEEPING

Contractors shall maintain the entire vehicle compliance testing area, fixtures and instrumentation in a neat, clean and painted condition with test instruments arranged in an orderly manner consistent with good test laboratory housekeeping practices.

5. TEST SCHEDULING AND MONITORING

The contractor shall submit a test schedule to the COTR prior to conducting the first compliance test. Tests shall be completed at intervals as required in the contract. If not specified, the first test shall be conducted within 6 weeks after receiving the first delivered unit. Subsequent tests shall be completed in no longer than 1 week intervals unless otherwise specified by the COTR.

Scheduling of tests shall be adjusted to permit vehicles (or equipment, whichever applies) to be tested to other FMVSSs as may be required by the OVSC. All compliance testing shall be coordinated with the COTR in order to allow monitoring by the COTR and/or other OVSC personnel if desired. The contractor shall submit a monthly test status report and a vehicle status report (if applicable) to the COTR. The vehicle status report shall be submitted until all vehicles are disposed of. The status report forms are provided in the forms section.

6. TEST DATA DISPOSITION

The Contractor shall make all preliminary compliance test data available to the COTR on location within four hours after the test. Final test data, including digital printouts and computer generated plots (if applicable), shall be available to the COTR in accordance with the contract schedule or if not specified within two working days. Additionally, the Contractor shall analyze the preliminary test results as directed by the COTR.

The test data shall be retained by the contractor for a minimum of 3 years after conclusion of each delivery order, purchase order, etc.

The contractor shall protect and segregate the data that evolves from compliance testing before and after each test.

TEST DATA LOSS

A. INVALID TEST DESCRIPTION

An invalid compliance test is one, which does not conform precisely to all requirements/specifications of the OVSC Laboratory Test Procedure and Statement of Work applicable to the test.

B. INVALID TEST NOTIFICATION

The Contractor shall notify NHTSA of any test not meeting all requirements/specifications of the OVSC Laboratory Test Procedure and Statement of Work applicable to the test, by telephone, within 24 hours of the test and send written notice to the COTR within 48 hours of the test completion.

C. RETEST NOTIFICATION

The Contracting Officer of NHTSA is the only NHTSA official authorized to notify the Contractor that a retest is required. The retest shall be completed within 2 weeks after receipt of notification by the Contracting Officer that a retest is required.

D. WAIVER OF RETEST

NHTSA, in its sole discretion, reserves the right to waive the retest requirement. This provision shall not constitute a basis for dispute over the NHTSA's waiving or not waiving any requirement.

E. TEST VEHICLE

If the testing requires a complete vehicle, NHTSA shall furnish only one vehicle for each test ordered. If the required testing will be conducted at the door only level, one vehicle may accommodate more than one ordered test. The Contractor shall furnish the test vehicle required for the retest. The retest vehicle shall be equipped as the original vehicle. The original vehicle used in the invalid test shall remain the property

6. TEST DATA DISPOSITION.....Continued

of NHTSA, and the retest vehicle shall remain the property of the Contractor. The Contractor shall retain the retest vehicle for a period not exceeding 180 days if it fails the test. If the retest vehicle passes the test, the Contractor may dispose of it upon notification from the COTR that the test report has been accepted.

F. TEST REPORT

No test report is required for any test that is determined to be invalid unless NHTSA specifically decides, in writing, to require the Contractor to submit such report. The test data from the invalid test must be safeguarded until the data from the retest has been accepted by the COTR. The report and other required deliverables for the retest vehicle are required to be submitted to the COTR within 3 weeks after completion of the retest.

G. DEFAULT

The Contractor is subject to the default and subsequent reprocurement costs for non-delivery of valid or conforming tests (pursuant to the Termination For Default clause in the contract).

H. NHTSA'S RIGHTS

None of the requirements herein stated shall diminish or modify the rights of NHTSA to determine that any test submitted by the Contractor does not conform precisely to all requirements/specifications of the OVSC Laboratory Test Procedure and Statement of Work applicable to the test.

7. GOVERNMENT FURNISHED PROPERTY (GFP)

GFP consists of test vehicles. The GFP is authorized by contractual agreement. The contractor is responsible for the following.

A. ACCEPTANCE OF TEST VEHICLES

The contractor has the responsibility of accepting each GFP test vehicle whether delivered by a new vehicle dealership or another vehicle transporter. In both instances, the Contractor acts on behalf of the OVSC when signing an acceptance of the GFP test vehicle delivery order. When a GFP vehicle is delivered, the contractor must verify:

1. All options listed on the "window sticker" are present on the test vehicle.
2. Tires and wheel rims are new and the same as listed.
3. There are no dents or other interior or exterior flaws in the vehicle body.
4. The vehicle has been properly prepared and is in running condition.
5. The glove box contains an owner's manual, warranty document, consumer information, and extra set of keys.
6. Proper fuel filler cap is supplied on the test vehicle.
7. Spare tire, jack, lug wrench and tool kit (if applicable) is located in the vehicle cargo area.
8. The VIN (vehicle identification number) on the vehicle condition report matches the VIN on the vehicle.
9. The vehicle is equipped as specified by the COTR.

A Vehicle Condition form will be supplied to the Contractor by the COTR when the test vehicle is transferred from a new vehicle dealership or between test contracts. The upper half of the form is used to describe the vehicle as initially accepted. The lower half of the Vehicle Condition form provides space for a detailed description of the post-test condition. The contractor must complete a Vehicle Condition form for each vehicle and deliver it to the COTR with the Final Test Report or the report will NOT be accepted for payment.

If the test vehicle is delivered by a government contracted transporter, the contractor should check for damage which may have occurred during transit. GFP vehicle(s) shall not be driven by the contractor on public roadways unless authorized by the COTR.

7. GOVERNMENT FURNISHED PROPERTY (GFP).....Continued

B. NOTIFICATION OF COTR

The COTR must be notified within 24 hours after a vehicle has been delivered. In addition, if any discrepancy or damage is found at the time of delivery, a copy of the Vehicle Condition form shall be sent to the COTR immediately.

8. CALIBRATION OF TEST INSTRUMENTS

Before the Contractor initiates the vehicle safety compliance test program, a test instrumentation calibration system must be implemented and maintained in accordance with established calibration practices. The calibration system shall include the following as a minimum:

- A. Standards for calibrating the measuring and test equipment shall be stored and used under appropriate environmental conditions to assure their accuracy and stability.
- B. All measuring instruments and standards shall be calibrated by the Contractor, or a commercial facility, against a higher order standard at periodic intervals not exceeding 12 months for instruments and 12 months for the calibration standards except for static types of measuring devices such as rulers, weights, etc., which shall be calibrated at periodic intervals not to exceed two years. Records, showing the calibration traceability to the National Institute of Standards and Technology (NIST), shall be maintained for all measuring and test equipment.

Accelerometers shall be calibrated every twelve months or after a test failure or after any indication from calibration checks that there may be a problem with the accelerometer whichever occurs sooner.

- C. All measuring and test equipment and measuring standards shall be labeled with the following information:
 - 1. Date of calibration
 - 2. Date of next scheduled calibration
 - 3. Name of the technician who calibrated the equipment
- D. A written calibration procedure shall be provided by the Contractor, which includes as a minimum the following information for all measurement and test equipment:
 - 1. Type of equipment, manufacturer, model number, etc.
 - 2. Measurement range
 - 3. Accuracy

8. CALIBRATION OF TEST INSTRUMENTS.....Continued

4. Calibration interval
 5. Type of standard used to calibrate the equipment (calibration traceability of the standard must be evident).
 6. The actual procedures and forms used to perform the calibrations.
- E. Records of calibration for all test instrumentation shall be kept by the Contractor in a manner that assures the maintenance of established calibration schedules.
- F. All such records shall be readily available for inspection when requested by the COTR. The calibration system shall need the acceptance of the COTR before vehicle safety compliance testing commences.
- G. Test equipment shall receive a system functional check out using a known test input immediately before and after the test. This check shall be recorded by the test technician(s) and submitted with the final report.
- H. The Contractor may be directed by NHTSA to evaluate its data acquisition system.

Further guidance is provided in the International Standard ISO 10012-1, "Quality Assurance Requirements for Measuring Equipment" and American National Standard ANSI/NCSL Z540-1, "Calibration Laboratories and Measuring and Test Equipment General Requirements."

NOTE: In the event of a failure to meet the standard's minimum performance requirements additional calibration checks of some critically sensitive test equipment and instrumentation may be required for verification of accuracy. The necessity for the calibration will be at the COTR's discretion and shall be performed without additional cost.

9. PHOTOGRAPHIC DOCUMENTATION

Digital Photographs

The contractor shall take digital photographs of the test execution procedures. Photographs shall be taken in color and contain clear images. A tag, label or placard identifying the test item, NHTSA number (if applicable) and date shall appear in each photograph and must be legible. Each photograph shall be labeled as to the subject matter. The required resolution for digital photographs is a minimum of 1,600 x 1,200 pixels. Digital photographs are required to be created in color and in a JPG format. Glare or light from any illuminated or reflective surface shall be minimized while taking photographs.

The test reports shall include enough photographs to describe the testing in detail and shall be organized in a logical succession of consecutive pictures. The digital photographs shall be included in the test report as 203 mm x 254 mm or 215.9 mm x 279 mm (8 x 10 or 8½ x 11 inch) pictures. All photographs are required to be included in the test report in the event of a test failure. Any failure must be photographed at various angles to assure complete coverage. Upon request, the photographs shall be sent to the COTR on a CD or DVD and saved in a “read only” format to ensure that the digital photographs are the exact pictures taken during testing and have not been altered from the original condition.

9.1 Photographic Views

Each final test report shall include digital photographs of the test setup used for each type of inertial load testing. Each report shall also include pre-test and post-test photographs of the specific item being tested. The photographs shall include a placard in view that identifies the test laboratory, the test date, test vehicle year, make and model, the specific FMVSS 206 test, and the words “Pre-Test” or “Post-Test” as appropriate.

9.2 Video Coverage

Each vehicle and door(s) only inertial load test shall be recorded with a digital video camera fully documenting the pre-test door closure procedure specified in section 12.1.4 (m) and section 12.2.4 (e) as applicable. Each vehicle inertial load test shall also include digital video recordings fully documenting the post-test door pull procedure specified in section 12.1.6 (d). The video coverage shall include a placard in view that identifies the test laboratory, the test date, test vehicle year, make and model, the specific FMVSS 206 test, and the words “Pre-Test” or “Post-Test” as appropriate.

9.3 Inertial Load Sled Test High-Speed Camera Coverage

Each vehicle and door(s) only inertial sled test (see sections 12.1 and 12.2, respectively) shall be documented with high-speed color digital video cameras. Digital files shall be provided, as a part of the final test report, on a compact disc(s) in

9. PHOTOGRAPHIC DOCUMENTATION.....Continued

a Windows Media compatible file format. Other file formats can be used if approved by the COTR. Additional camera requirements for each test are specified below:

- (a) For each vehicle transverse sled test, one onboard (onboard the acceleration sled /vehicle carriage) high-speed camera is required for each hinged side door and each sliding side door of the vehicle. The cameras shall be mounted outside the vehicle and shall be positioned such that they clearly record the position of the opening edge of the door relative to the vehicle body.

In addition, each test shall include a minimum of one off-board camera for each vehicle back door. The cameras shall be positioned such that they clearly record the position of the opening edge of the door relative to the vehicle body.

The cameras are required to record any hinged door opening (including back doors) and sliding side door opening during each vehicle inertial sled test.

- (b) For each vehicle longitudinal sled test, a minimum of one off-board camera shall be required for each hinged side and back door, and each sliding side door of the vehicle. The cameras shall be positioned such that they clearly record the position of the opening edge of the door relative to the vehicle body.

The cameras are required to record any hinged door opening (including back doors) and sliding side door opening during each vehicle inertial sled test.

- (c) For each door(s) only sled test, a minimum of one onboard high-speed camera is required for each door being tested. The cameras shall be positioned such that they clearly record the door latch and striker interface.

- (d) Vehicle identification placards shall be positioned so that at least 1 placard will be visible in the field-of-view for each of the cameras. The following information will be shown:

- i. Vehicle's NHTSA Number
- ii. FMVSS 206 inertial load sled test
(specify vehicle or specific door(s), and test orientation(s))
- iii. Date of test
- iv. Name of contract laboratory
- v. Vehicle year, make and model

- (e) The cameras shall operate at 250 frames per second (minimum) for at least 10 ms before the sled is accelerated and for at least 310 ms after the sled acceleration pulse is completed.

- (f) For high-speed color digital video cameras:
The minimum resolution for these cameras shall be 1536 CMOS sensors per every two rows of pixels, with 80% of the horizontal distance of the two rows covered by effective light sensors. There shall be a minimum of 1024 rows of

9. PHOTOGRAPHIC DOCUMENTATION.....Continued

sensors. Cameras that do not meet these specifications may be used if approved by the COTR.

A time zero impact mark must be registered in a frame to indicate time zero (0.5 g) of the acceleration pulse for the specific inertial sled test. Each frame shall contain the camera speed and the frame number beginning with the time zero frame labeled as "Frame 0." The frame numbers prior to time zero shall be negative numbers.

9. PHOTOGRAPHIC DOCUMENTATION.....Continued

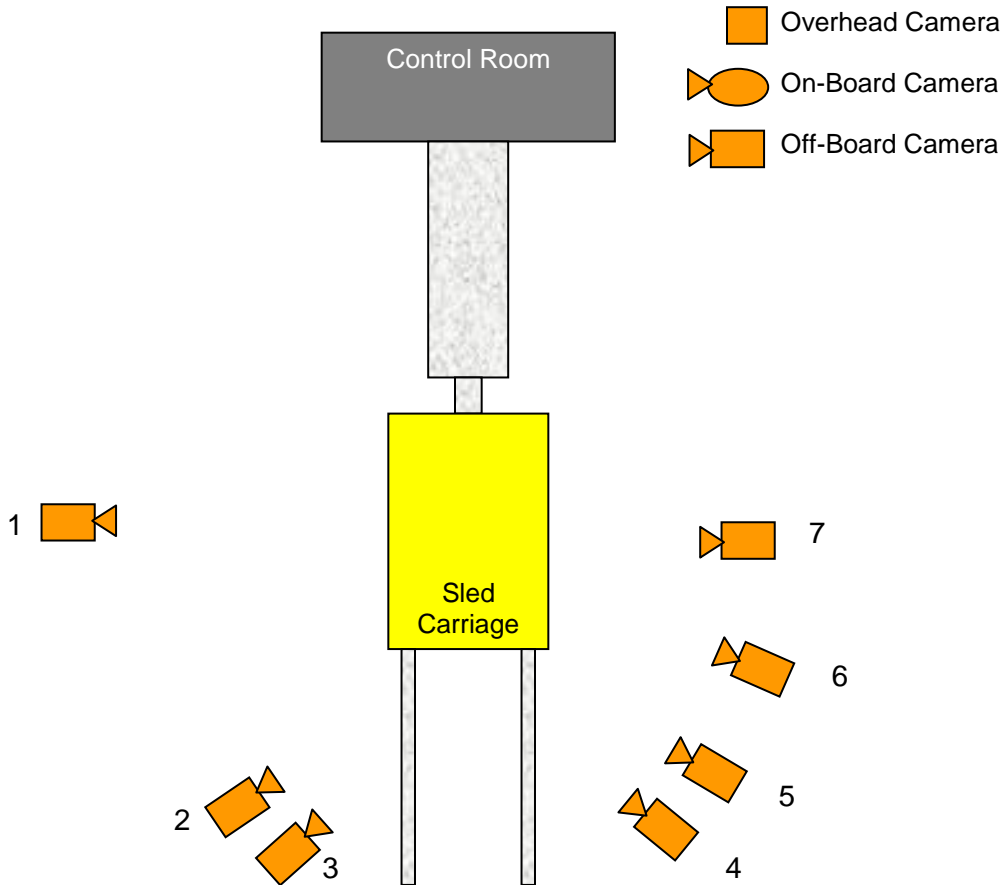
(g) Typical Vehicle High-Speed Camera Locations

Typical high-speed camera locations for vehicle longitudinal and transverse sled testing are described in Figures 1 and 2 respectively. (Typical vehicle with 4 side doors and one back door).

FIGURE 1. CAMERA LOCATIONS – LONGITUDINAL TEST

CAMERA NO.	VIEW
1	Left Side View Overall
2	Left Front Door View*
3	Left Rear Door View *
4	Right Rear Door View*
5	Right Front Door View*
6	Back Door View*
7	Right Side View Overall

* Minimum Required

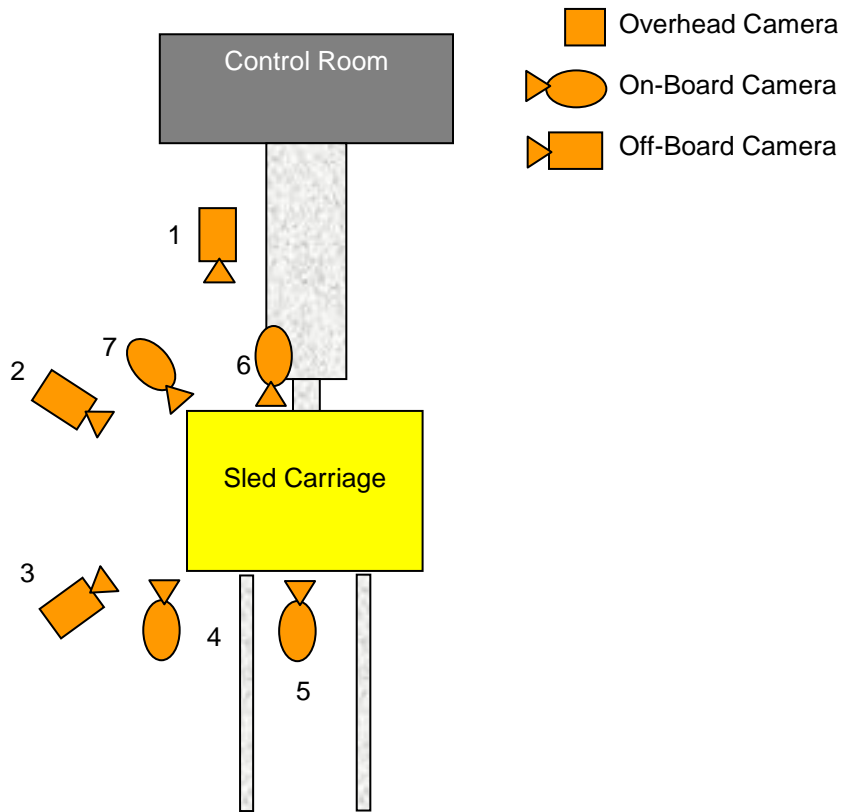


9. PHOTOGRAPHIC DOCUMENTATION.....Continued

FIGURE 2. CAMERA LOCATIONS – TRANSVERSE TEST

CAMERA NO.	VIEW
1	Back Door View Overall*
2	Left Side Rear View
3	Right Side Rear View
4	Right Rear Door Onboard*
5	Right Front Door Onboard*
6	Left Front Door Onboard*
7	Left Rear Door Onboard*

* Minimum Required



9. PHOTOGRAPHIC DOCUMENTATION.....Continued

(h) Vehicle Reference Targets

Photographic targets shall be firmly bonded onto the test vehicle. The targets shall be affixed in pairs located parallel to each other on each side of the vertical opening edge of each door, and as close to the door gap as possible. For each door, the target pairs shall be affixed near the upper portion of the door (just under the window sill for a hinged side door), near the mid portion of the door along the vehicle body, and near the bottom portion of the door, at a minimum. Typical target locations for hinged side doors are shown below in Figure 3.



Figure 3. Typical Target Locations for Hinged Side Doors

10. DEFINITIONS

Auxiliary Door Latch is a latch equipped with a fully latched position, with or without a secondary latched position, and fitted to a door or door system equipped with a primary door latch system.

Auxiliary Door Latch System consists of door latches and strikers other than those associated with the primary latch system.

Back Door is a door or door system on the back end of a motor vehicle through which passengers can enter or depart the vehicle or cargo can be loaded or unloaded. It does not include:

A trunk lid; or

A door or window composed entirely of glazing material and whose latches and/or hinge systems are attached directly to the glazing material.

Designated Seating Capacity means the number of designated seating positions provided.

Door Hinge System is one or more hinges used to support a door.

Door Latch System consists of latches and strikers installed on a door system.

Door System is the door, latch, striker, hinges, sliding track combinations and other door retention components on a door and its surrounding doorframe. The door system of a double door includes both doors.

Double Door is a system of two doors where the front door or wing door opens first and connects to the rear door or bolted door, which opens second.

Folding Door is a movable barrier, which will close off an entranceway to a bus, multipurpose passenger vehicle or truck, consisting of two or more hinge panels that swing, slide, or rotate; does not have a striker and latch assembly

Fully Latched Position is the coupling condition of the latch that retains the door in a completely closed position.

Hinge is a device system used to position the door relative to the body structure and control the path of the door swing for passenger ingress and egress.

Gross Axle Weight Rating (GAWR) means the value specified by the vehicle manufacturer as the load-carrying capacity of a single axle system, as measured at the tire-ground interfaces.

Gross Vehicle Weight Rating (GVWR) means the value specified by the manufacturer as the loaded weight of a single vehicle.

Latch is a device employed to maintain the door in a closed position relative to the vehicle body with provisions for deliberate release (or operation).

10. DEFINITIONS....Continued

Primary Door Latch is a latch equipped with both a fully latched position and a secondary latched position and is designated as a "primary door latch" by the manufacturer (by the time it certifies the vehicle and may not thereafter alter the designation).

Primary Door Latch System consists of a primary door latch(s) and a striker(s).

Secondary Latched Position refers to the coupling condition of the latch that retains the door in a partially closed position.

Striker is a device with which the latch engages to maintain the door in the fully latched or secondary latched position.

Trunk Lid is a movable body panel that provides access from outside the vehicle to a space wholly partitioned from the occupant compartment by a permanently attached partition or fixed or fold-down seat back.

Unloaded Vehicle Weight (UVW) means the weight of a vehicle with maximum capacity of all fluids necessary for operation of the vehicle, but without cargo, occupants, or accessories that are ordinarily removed from the vehicle when they are not in use.

Vehicle Capacity Weight (VCW) means the rated cargo and luggage load plus 68 kilograms times the vehicle's designated seating capacity.

11. PRETEST REQUIREMENTS

11.1 IN-HOUSE TEST PROCEDURE

Every contractor is required to submit a detailed in-house test procedure to the COTR before initiating the compliance test program. The procedure must include a step-by-step description of the methodology to be used. The contractor's test procedure shall contain a detailed check-off sheet and a complete listing of test equipment with makes and model numbers. The list of test equipment shall include instrument accuracy and calibration dates. There shall be no contradictions between the OVSC Laboratory Test Procedure and the contractor's in-house procedure without COTR agreement. The procedures shall cover all aspects of testing from vehicle receipt to submission of the final report. Written approval of the in-house test procedure and all subsequent revisions shall be obtained from the COTR. The in-house procedure shall include the following:

- A. A step-by-step description of the methodology and test procedure to be used.
- B. A written Quality Control (QC) procedure which shall include calibrations, the data review process, report review, and the people assigned to perform QC per task.
- C. A complete listing of test equipment which shall include instrument accuracy and calibration dates.
- D. Detailed check-off lists to be used during the test and during data review. These lists shall include all test procedure requirements and FMVSS requirements pertaining to the safety standard for which testing is being performed. Each separate check-off sheet shall identify the lab, test date, vehicle and test technicians. These check sheets shall be used to document that all requirements and procedures have been complied with. These sheets shall be submitted with the test report.

11.2 INSTRUMENTATION AND DATA ACQUISITION

11.2.1 Vehicle Inertial Load Sled Test

The acceleration sled platform shall be instrumented with an accelerometer and data processing system that conforms to the requirements specified in Society of Automotive Engineers (SAE) Recommended Practice J211 December 2003, "Instrumentation for Impact Test – Part 1 – Electronic Instrumentation", Channel Class 60. The accelerometer sensitive axis shall be parallel to the direction of test platform travel. A primary and secondary (back-up) accelerometer shall be used for each sled test.

11.2.2 Door Only Inertial Load Sled Test

The acceleration sled platform shall be instrumented with an accelerometer and data processing system that conforms to the requirements specified in SAE Recommended Practice J211 December 2003, "Instrumentation for Impact Test – Part 1 – Electronic Instrumentation", Channel Class 60. The accelerometer sensitive axis shall be parallel to the direction of test platform travel. A primary and secondary (back-up) accelerometer shall be used for each sled test.

11. PRETEST REQUIREMENTS...Continued

11.3 TEST CONDITIONS

Unless otherwise specified, all tests and measurements shall be conducted under the following environmental conditions:

- A. Temperature: $70^{\circ}\text{F} \pm 5^{\circ}\text{F}$ ($21^{\circ}\text{C} \pm 3^{\circ}\text{C}$)
- B. Relative Humidity: $50\% \pm 10\%$
- C. Atmospheric Pressure: 28 to 32 inches (711 mm to 813 mm) of mercury

Continuous recording of environmental temperature and relative humidity of the testing area shall be conducted during all tests. Test vehicles, unless otherwise specified, shall be stabilized at test room ambient conditions for a period of at least 24 hours immediately prior to testing.

11.4 TEST PERSONNEL PERFORMANCE

Personnel supervising and/or performing the compliance test program shall be thoroughly familiar with the requirements, test conditions, equipment for the test to be conducted, and safety requirements.

11.5 RECORDING OF TEST DATA

Data will be submitted on the Test Data Sheet forms specified for use in the final test report. Data will be typed before the sheets are submitted. One set of Inspection and Test Data sheets shall be completed for each vehicle (see Section 15).

12. COMPLIANCE TEST EXECUTION

12.1 VEHICLE INERTIAL LOAD SLED TEST

12.1.1 Vehicle Preparation Building

Vehicle preparation shall be performed in a building that is large enough to house the test vehicle and allow for government, vehicle manufacturer, and laboratory personnel to easily move around the test vehicle.

12.1.2 Sled System

The sled test equipment shall be housed in a temperature-controlled building that is large enough to house the test vehicle and allow for government, vehicle manufacturer, and laboratory personnel to move around the test vehicle. The building climate control must be capable of maintaining the ambient air temperature between 65°F and 75°F (18°C to 24°C).

With the vehicle (for buses, maximum Gross Vehicle Weight Rating (GVWR) of 4536 kg) rigidly secured to the acceleration device, the sled system must be capable of ensuring that when accelerated together, all points on the recorded crash pulse curve are within the acceleration corridor defined in Table 2 and Figure 4.

12. COMPLIANCE TEST EXECUTION...Continued

Upper Bound			Lower Bound		
Point	Time (ms)	Acceleration (g)	Point	Time (ms)	Acceleration (g)
A	0	6	E	5	0
B	20	36	F	25	30
C	60	36	G	55	30
D	100	0	H	70	0

Table 2 – Acceleration Pulse Corridor

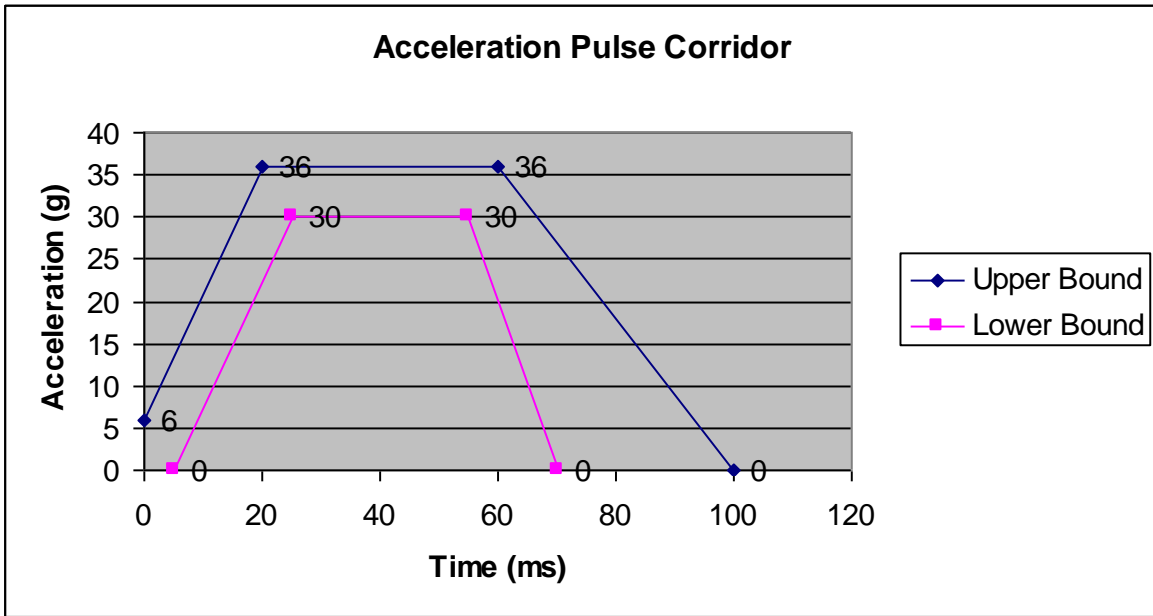


Figure 4

12.1.3 Vehicle Attitude

Vehicle Pitch

When the vehicle is in its “as delivered” condition measure the angle of the driver’s door sill. Mark the location where the angle is taken on the door sill. When the vehicle is in its “loaded” condition, measure the angle of the driver’s door sill at the same location the “as delivered” angle was measured. When the vehicle is secured to the acceleration sled (see section 12.1.4), the vehicle pitch attitude on the sled, determined by the door sill angle, should be between the “as delivered” and the “loaded” condition. The vehicle “as delivered” and “loaded” conditions are defined below.

12. COMPLIANCE TEST EXECUTION...Continued

Vehicle Roll

Mark a point on the vehicle body centered near the top of the front wheel well on each side of the vehicle. From a level surface, measure the vertical distance to each marked location on the front wheel wells when the vehicle is in the "as delivered" or "loaded" condition. When the vehicle is secured to the acceleration sled (see section 12.1.4), measure the vertical distance from the top surface of the sled to each marked location on the front wheel wells. The distance between the two corresponding measurements for each front wheel well shall be within 25.4 mm (1 inch) of each other. The vehicle "as delivered" and "loaded" conditions are defined below.

As Delivered Condition

The "as delivered" condition is the vehicle as received at the test site, with 100 percent of all fluid capacities (i.e. unloaded vehicle weight (UVW)), and all tires inflated to the manufacturer's specifications as listed on the vehicle's tire placard.

Loaded Condition - Passenger Car

A passenger car shall be loaded to its UVW plus its rated cargo and luggage capacity weight (RCLW) in the luggage area, plus the weight of two 50th-percentile adult male test dummies (156 kg (344 lb)) distributed equally at the front outboard designated seating positions.

The FMVSS 110 requires that the maximum combined weight of occupants and cargo (i.e. vehicle capacity weight (VCW)) and the seating capacity (i.e. designated seating capacity (DSC)) be recorded on the vehicle placard. (Check the number of restraints provided in the vehicle against the DSC. Inform the COTR immediately if they do not match.) This information can be used to determine the "rated cargo and luggage weight" (RCLW) as follows:

$$\text{RCLW} = \text{VCW} - (68 \text{ kg (150 lb)} \times \text{DSC})$$

Loaded Condition - Multipurpose Passenger Vehicles, Trucks and Buses

A multipurpose passenger vehicle (MPV), truck or bus is loaded to its UVW, plus 300 pounds or its RCLW, whichever is less, plus the weight of two 50th-percentile adult male test dummies (156 kg (344 lb)) distributed equally at the front outboard designated seating positions.

Where the VCW is not provided on a label similar to the FMVSS 110 placard, it can be calculated by the following formula:

$$\text{VCW} = \text{GVWR} - \text{UVW}$$

$$\text{RCLW} = \text{VCW} - (68 \text{ kg (150 lb)} \times \text{DSC})$$

12. COMPLIANCE TEST EXECUTION...Continued

The scales used to weigh the test vehicle shall be accurate to within $\pm 0.1\%$. The vehicle pitch angle measurements shall be accurate to within ± 0.5 degree, and the vehicle roll measurements shall be accurate to within ± 1 mm.

12.1.4 Vehicle Preparation

- (a) Drain the fuel system and operate the engine until the fuel system is dry. Drain all other fluids from the test vehicle.
- (b) Disconnect the air bags.
- (c) Remove wheels from the vehicle.
- (d) Rigidly attach the vehicle to the sled interface frame or sled so that movement between the base of the vehicle and the test platform is prevented. (In other words, when accelerated together, the recorded crash pulse curve is within the acceleration corridor defined in Table 2 and Figure 4.) Mount the vehicle as low as possible on the sled in order to keep the center of gravity as low as possible.
- (e) Rigidly attach the engine, transmission, axles, and exhaust system to the vehicle body, vehicle frame, interface frame, or sled. The suspension should be welded or removed. (Alternatively, vehicle preparation may remove the engine and other components in the engine compartment, transmission, axles, and exhaust system while retaining all of the vehicle "body" components). Door trim and panels shall not be removed. If the vehicle has a frame, rigidly attach the body to the frame.
- (f) If the vehicle is not attached directly to the sled, rigidly attach the vehicle/interface frame unit to the sled.
- (g) Verify that the vehicle attitude when secured to the acceleration sled complies with the requirements specified in section 12.1.3.
- (h) Remove the battery from the vehicle.
- (i) Convertibles and open-body type vehicles have the top, if any, in place in the closed passenger compartment configuration.
- (j) The hood, hood latches, and any other hood retention components are engaged.
- (k) To facilitate the post-test door fully latched assessment specified in section 12.1.6, any attachment device required to be affixed to the door shall be applied to each door prior to conducting the inertial sled test. Each device shall be affixed on the exterior of each door at a point that is along the horizontal centerline of the door latch, and that is 76 mm (3 inches) (± 1 cm (0.4 in)) from the edge of the door containing the latch.
- (l) Close all windows.

12. COMPLIANCE TEST EXECUTION...Continued

- (m) Close all doors and ensure that each door latch is in the fully latched position, and that each door is unlocked. This shall be documented as specified in section 9.2. (If needed, doors may be tethered to avoid damaging the recording equipment).
- (n) Verify the required instrumentation per section 11.2.1.
- (o) Install the required high-speed cameras for recording any door opening as specified in section 9.3. Affix the reference targets as specified in section 9.3 (i).

12.1.5 Vehicle Sled Test

- (a) Conduct the vehicle sled test as required per the following test orientations as applicable:
 - (1) Longitudinal Setup # 1:
Orient the vehicle so that its longitudinal axis is aligned with the axis of the acceleration sled, simulating a frontal impact (i.e., vehicle is accelerated in the rearward direction).
 - (2) Longitudinal Setup # 2:
Orient the vehicle so that its longitudinal axis is aligned with the axis of the acceleration sled, simulating a rear impact (i.e., vehicle is accelerated in the forward direction).
 - (3) Transverse Setup # 1:
Orient the vehicle so that its transverse axis is aligned with the axis of the acceleration sled, simulating a driver side impact (i.e., vehicle is accelerated with the passenger side of the vehicle leading the direction of acceleration).
 - (4) Transverse Setup # 2:

Note: Only for vehicles having different door arrangements on each side.

Orient the vehicle so that its transverse axis is aligned with the axis of the acceleration sled, simulating a side impact in the direction opposite to that specified in section 12.1.5 (a) (3) above (i.e., vehicle is accelerated with the driver side of the vehicle leading the direction of acceleration).

12. COMPLIANCE TEST EXECUTION....Continued

- (b) Conduct the vehicle sled test for each applicable vehicle orientation specified in section 12.1.5 (a). For each vehicle sled test, maintain a minimum acceleration level of 30 g for a period of at least 30 ms, while keeping the acceleration within the pulse corridor defined in Table 2 and Figure 4. Time zero shall be taken as 0.5 g.

Note: Normally the recorded acceleration must be within the acceleration pulse corridor defined in Table 2 and Figure 4 in order for the test to be valid. However, if at any point in time during the test the pulse exceeds 36 g and the test requirements are met, the test shall be considered valid.

- (c) Note: Except as noted in section 12.1.5 (b) above, the recorded acceleration for each sled test must be within the acceleration pulse corridor defined in Table 2 and Figure 4. In order to adjust for different sled systems, the curve may be shifted with respect to time to obtain this result. If the curve is shifted, report the specific time shift.

- (d) After each vehicle sled test:

- (1) Visually inspect the vehicle for evidence of any door opening and record results. (Data Sheet No. 1).
- (2) Thoroughly review the high-speed camera records for evidence of any door opening and record results. (Data Sheet No. 1).

- (e) For each vehicle sled test, a copy of the recorded acceleration shall be plotted against the acceleration pulse corridor shown in Figure 4 and included in the Final Report.

12. COMPLIANCE TEST EXECUTION...Continued

12.1.6 Post-Test Door Fully Latched Assessment

- (a) For side doors, apply a horizontal force of 270 N (± 10 N) perpendicular ($\pm 10^\circ$) to the longitudinal centerline of the vehicle in the door opening direction. For sliding side doors, apply a horizontal force of 270 N (± 10 N) at 45 degrees ($\pm 10^\circ$) to the longitudinal centerline of the vehicle in the door opening/sliding direction. For back doors, apply a horizontal force of 270 N (± 10 N) perpendicular ($\pm 10^\circ$) to the transverse centerline of the vehicle in the door opening direction. (The door opening direction for hinged doors refers to the initial direction that the door will move when opening along its swing path.)
- (b) The horizontal force shall be applied by a loading device attached to the exterior of each door at a point that is along the horizontal centerline of the door latch (along the vertical centerline of the door latch for back doors that open upward), and that is 102 mm (4 inches) (± 10 mm (0.4 in)) from the edge of the door containing the latch.
- (c) The device shall apply the load to the exterior of the door by a means approved by the COTR.
- (d) While the horizontal force is applied, digital video coverage shall be taken as specified in section 9.2 to clearly document any opening of the door. The door shall be considered to fail if the door does not remain fully latched. (Data Sheet No. 1).

12. COMPLIANCE TEST EXECUTION...Continued

12.2 DOOR ONLY INERTIAL LOAD SLED TEST

12.2.1 Vehicle Preparation and Door Removal Building

Vehicle preparation and door removal shall be performed in a building that is large enough to house the test vehicle and allow for government, vehicle manufacturer, and laboratory personnel to move around the test vehicle.

12.2.2 Sled System

The sled test equipment shall be housed in a temperature-controlled building that is large enough to house the door test fixture (with up to five doors properly attached for testing) and allow for government, vehicle manufacturer, and laboratory personnel to move around the test sled. The building climate control must be capable of maintaining the ambient air temperature between 65°F and 75°F (18°C and 24°C).

With the test fixture and door(s) rigidly secured to the acceleration device, the sled system must be capable of ensuring that when accelerated together, all points on the recorded crash pulse curve are within the acceleration corridor defined in Table 2 and Figure 4.

12.2.3 Vehicle Preparation and Door Removal

Prior to removal of the vehicle door(s) for testing, the vehicle attitude shall be determined as specified in section 12.1.3. With the vehicle attitude between the "as delivered" and "fully loaded" condition, inclusive, identify and record the relative locations of the hinge mounting points and the striker mounting points for each door using a 3-D positioning arm (or equivalent device to accurately record 3-D coordinates).

Carefully remove each door to be tested from the vehicle and retain all mounting bolts for reassembling each door to the test fixture. Any wire or cabling connecting the door to the vehicle can be severed at the door. Each removed door shall be considered a "door subsystem". Ensure that each door subsystem maintains, at a minimum, the door latch(es), exterior door handle(s) with mechanical latch operation, interior door opening lever(s), and locking device(s), either separately or combined to a test fixture.

12.2.4 Door Test Fixture Setup

- (a) Each door only sled test may be configured to test multiple doors at different or similar orientations.

12. COMPLIANCE TEST EXECUTION...Continued

- (b) The test fixture for mounting the door(s) shall be constructed with mounting surfaces for the door upper and lower hinges, and for the door striker. Securely attach each door to be tested to the test fixture using the proper bolts and 3-D positioning data obtained before removal of the doors from the vehicle per section 12.2.3. Each door and striker shall be mounted to the test fixture to correspond to its orientation on the vehicle, and to the directions specified in section 12.2.5 as appropriate.
- (c) Rigidly attach the assembled door(s) test fixture to the acceleration sled such that, when accelerated together, the recorded crash pulse curve is within the acceleration corridor defined in Table 2 and Figure 4.
- (d) Ensure that all windows are closed.
- (e) Close all doors and ensure that each door latch is in the fully latched position, and that each door is unlocked. This shall be documented as specified in section 9.2.
- (f) Verify the required instrumentation per section 11.2.2.
- (g) Install the required high-speed cameras for recording any door opening as specified in section 9.3.

12.2.5 Door Sled Test

- (a) Conduct the door sled test as required per the following test orientations as applicable:
 - (1) Longitudinal Setup 1:
Orient the door subsystem(s) on the acceleration device in the direction of a frontal impact.
 - (2) Longitudinal Setup 2:
Orient the door subsystem(s) on the acceleration device in the direction of a rear impact.
 - (3) Transverse Setup 1:
Orient the door subsystem(s) on the acceleration device in the direction of a driver-side impact.
 - (4) Transverse Setup 2:
Orient the door subsystem(s) on the acceleration device in the direction opposite to that described in section 12.2.5 (a) (3).

12. COMPLIANCE TEST EXECUTION...Continued

(5) Vertical Setup 1 (only for back doors that open upward):

Orient the door subsystem(s) on the acceleration device so that its vertical axis (when mounted in the vehicle) is aligned with the axis of the acceleration device, simulating a rollover impact where the force is applied in the direction from the top to the bottom of the door (when mounted in a vehicle).

(6) Vertical Setup 2 (only for back doors only that open upward):

Orient the door subsystem(s) on the acceleration device so that its vertical axis (when mounted in the vehicle) is aligned with the axis of the acceleration device, simulating a rollover impact where the force is applied in the direction opposite to that described in section 12.2.5 (a) (5).

(b) Conduct the door(s) sled test for each applicable orientation specified in section 12.2.5 (a). For each door sled test, maintain a minimum acceleration level of 30 g for a period of at least 30 ms, while keeping the acceleration within the pulse corridor defined in Table 2 and Figure 4. Time zero shall be taken as 0.5 g.

Note: Normally the recorded acceleration must be within the acceleration pulse corridor defined in Table 3 and Figure 8 in order for the test to be valid. However, if at any point in time during the test the pulse exceeds 36 g and the test requirements are met, the test shall be considered valid.

(c) Note: Except as noted in section 12.2.5 (b) above, the recorded acceleration for each sled test must be within the acceleration pulse corridor defined in Table 2 and Figure 4. In order to adjust for different sled systems, the curve may be shifted with respect to time to obtain this result. If the curve is shifted, report the specific time shift.

(d) After each door sled test:

(1) Visually inspect each door tested for evidence of any door opening (while verifying that each door is fully latched) and record results. (Data Sheet No. 1).

(2) Thoroughly review the high-speed camera records for evidence of any door opening and record results. (Data Sheet No. 1).

(e) For each door sled test, a copy of the recorded acceleration shall be plotted against the acceleration pulse corridor shown in Figure 4 and included in the Final Report.

13. POST TEST REQUIREMENTS

The contractor shall re-verify all instrumentation and check data sheets and photographs. Make sure data is recorded in all data blocks on every compliance test data sheet.

14. REPORTS

14.1 MONTHLY STATUS REPORTS

The contractor shall submit a monthly Test Status Report and a Vehicle Status Report to the COTR. The Vehicle Status report shall be submitted until all vehicles are disposed of. Samples of the required reports are found in the report forms section.

14.2 APPARENT TEST FAILURE

Any indication of a test failure shall be communicated by telephone to the COTR within 24 hours with written notification mailed within 48 hours (Saturdays and Sundays excluded). A Notice of Test Failure (see report forms section) with a copy of the particular compliance test data sheet(s) and preliminary data plot(s) shall be included. In the event of a test failure, a post test calibration check of some critically sensitive test equipment and instrumentation may be required for verification of accuracy. The necessity for the calibration shall be at the COTR's discretion and shall be performed without additional costs to the OVSC.

14.3 FINAL TEST REPORTS

14.3.1 COPIES

Two hard copies of each Final Test Report and one electronic copy shall be submitted to the COTR for acceptance within two weeks of test completion. The Final Test Report format to be used by all contractors is specified in the following subsections, and sample Data Sheet formats are included in section 15. The electronic copy shall be submitted on Compact Disc Recordable (CDR) in Microsoft Soft (MS) Word format and Adobe Acrobat Portable Document Format (PDF), or the electronic copy may be emailed directly to the COTR.

Payment of contractor's invoices for completed compliance tests may be withheld until the Final Test Report is accepted by the COTR. Contractors are requested to NOT submit invoices before the COTR is provided copies of the Final Test Report.

Contractors are required to submit the first Final Test Report in typed draft form within two (2) weeks after the compliance test is conducted. The contractor and the COTR will then be able to discuss the details of both test conduct and report content early in the compliance test program.

Contractors are required to PROOF READ all Final Test Reports before submittal to the COTR. The OVSC will not act as a report quality control office for contractors. Reports containing a significant number of errors will be returned to the contractor for correction, and a "hold" will be placed on invoice payment for the particular test.

14. REPORTS...Continued

14.3.2 REQUIREMENTS

The Final Test Report and associated documentation (including photographs) are relied upon as the chronicle of the compliance test. The Final Test Report will be released to the public domain after review and acceptance by the COTR.

For these reasons, each final report must be a complete document capable of standing by itself. The contractor should use DETAILED descriptions of all compliance test events. Any events that are not directly associated with the standard but are of technical interest should also be included. The contractor should include as much DETAIL as possible in the report. Instructions for the preparation of the first three pages of the final test report are provided for standardization.

14.3.3 FIRST THREE PAGES

A. FRONT COVER

A heavy paperback cover (or transparency) shall be provided for the protection of the final report. The information required on the cover is as follows:

(1) Final Report Number such as 206-ABC-20XX-00X, where –

206 is the FMVSS tested
ABC are the initials for the laboratory
20XX is the Fiscal Year of the test program
00X is the Group Number

(2) Final Report Title And Subtitle such as:

VEHICLE SAFETY COMPLIANCE TESTING
FMVSS No. 206, Door Locks and Door Retention Components
Inertial Load Sled Test

World Motors Corporation
20XX Safe Rider 2-door Coupe
NHTSA No.:
Sled Test No.: S206I-001/00X

(3) Contractor's Name and Address such as

COMPLIANCE TESTING LABORATORIES, INC.
4335 West Dearborn Street
Detroit, Michigan 48090-1234

14. REPORTS....Continued

NOTE: DOT SYMBOL WILL BE PLACED BETWEEN ITEMS (3) AND (4)

- (4) Date of Final Report completion
- (5) The words "FINAL REPORT"
- (6) The sponsoring agency's name and address as follows

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Enforcement
Office of Vehicle Safety Compliance
Mail Code: NVS-220, W43-481
1200 New Jersey Avenue, SE
Washington, DC 20590

14. REPORTS....Continued

B. FIRST PAGE AFTER FRONT COVER

When a contract test laboratory is reporting, a disclaimer statement and an acceptance signature block for the COTR shall be provided as follows:

This publication is distributed by the National Highway Traffic Safety Administration in the interest of information exchange. Opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof.

If trade or manufacturers' names or products are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement.

Prepared By: _____

Approved By: _____

Approval Date: _____

FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By: _____

Acceptance Date: _____

14. REPORTS....Continued**C. SECOND PAGE AFTER FRONT COVER**

A completed Technical Report Documentation Page (Form DOT F1700.7) shall be completed for those items that are applicable with the other spaces left blank. Sample data for the applicable block numbers of the title page follows.

Block 1 — REPORT NUMBER

206-ABC-20XX-00X

Block 2 — GOVERNMENT ACCESSION NUMBER

Leave blank

Block 3 — RECIPIENT'S CATALOG NUMBER

Leave blank

Block 4 — TITLE AND SUBTITLE

Final Report of FMVSS 206 Inertial Load Compliance Testing of Side Door Latches from a 20XX Safe Rider 2-door coupe

Block 5 — REPORT DATE

Month Day, 20XX

Block 6 — PERFORMING ORGANIZATION CODE

ABC

Block 7 — AUTHOR(S)

John Smith, Project Manager
Bill Doe, Project Engineer

Block 8 — PERFORMING ORGANIZATION REPORT NUMBER

206-ABC-20XX-00X

14. REPORTS....Continued

Block 9 — PERFORMING ORGANIZATION NAME AND ADDRESS

ABC Laboratories
405 Main Street
Detroit, MI 48070-1234

Block 10 — WORK UNIT NUMBER

Leave blank

Block 11 — CONTRACT OR GRANT NUMBER

DTNH22-XX-D-12345

Block 12 — SPONSORING AGENCY NAME AND ADDRESS

United States Department of Transportation
National Highway Traffic Safety Administration
Office of Vehicle Safety Compliance
Mail Code: NVS-220
1200 New Jersey Avenue, SE
Washington, DC 20590

Block 13 — TYPE OF REPORT AND PERIOD COVERED

Final Test Report
Month Day to Month Day, 20XX

Block No. 14 — SPONSORING AGENCY CODE

NVS-220

Block 15 — SUPPLEMENTARY NOTES

Leave blank

14. REPORTS....Continued

Block 16 — ABSTRACT

Compliance tests were conducted on the subject 20XX Safe Rider 2-door coupe in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-206I-01. Test failures identified were as follows:

None

NOTE: Above wording must be shown with appropriate changes made for a particular compliance test. Any questions should be resolved with the COTR.

Block 17 — KEY WORDS

FMVSS 206
Door Locks and Door Retention Components
Inertial Load Sled Test

Block 18 — DISTRIBUTION STATEMENT

Copies of this report are available from

National Highway Traffic Safety Administration
Technical Information Services Division, NPO-411
1200 New Jersey Ave., SE (Rm E12-100)
Washington, DC 20590
FAX No.: 202-493-2833
Email: tis@nhtsa.dot.gov

Block 19 — SECURITY CLASSIFICATION OF REPORT

Unclassified

Block 20 — SECURITY CLASSIFICATION OF PAGE

Unclassified

Block 21 — NUMBER OF PAGES

Add appropriate number

14. REPORTS....Continued

Block 22 — PRICE

Leave blank

14.3.4 TABLE OF CONTENTS

Final test report Table of Contents shall include the following:

Section

- 1 Purpose of Compliance Test
- 2 Test Notes / Deviations
- 3 Compliance Test Data Summary
- 4 Vehicle Information
- 5 Test Data Sheets
- 6 Test Failure Description

Data Sheets

- 1 Post-Test Fully Latched Assessment and Inspection Data
- 2 Instrumentation Calibration Data
- 3 Camera Locations

Appendix (as applicable)

- A Vehicle Longitudinal Sled Test Data
- B Vehicle Longitudinal Sled Test Photographs
- C Vehicle Transverse Sled Test Data
- D Vehicle Transverse Sled Test Photographs
- E Door Only Longitudinal Sled Test Data
- F Door Only Longitudinal Sled Test Photographs
- G Door Only Transverse Sled Test Data
- H Door Only Transverse Sled Test Photographs
- I Door Only Vertical Sled Test Data
- J Door Only Vertical Sled Test Photographs

NOTE: Each inertial load test Final Report shall contain the test information and data sheets associated with either the vehicle test or the door only test, as applicable. Each vehicle test Final Report shall contain complete test data for the longitudinal and transverse testing, if both tests are conducted on a vehicle model. Each door only test Final Report shall contain complete test data for all doors and test orientations conducted on a vehicle model.

15. REPORT SECTIONS and DATA SHEETS

SECTION 1

PURPOSE OF COMPLIANCE TEST

The tests performed are part of the safety compliance program for the National Highway Traffic Safety Administration (NHTSA) by ABC under Contract No. DTNH22-XX-D-12345. The purpose of the testing is to determine whether production motor vehicle door latch systems meet the minimum inertial load test requirements of TP-206I-01, "Door Locks and Door Retention Components, Inertial Load Sled Test". The testing was conducted in accordance with the ABC testing procedure submitted to and approved by NHTSA along with the Office of Vehicle Safety Compliance Test Procedure No. TP-206I-01.

SECTION 2
TEST NOTES / DEVIATIONS

Test Vehicle:

Vehicle Longitudinal Test:

Vehicle Transverse Test:

SECTION 2... (continued)
TEST NOTES / DEVIATIONS

Test Vehicle and Door(s):

Door Only Longitudinal Test:

Door Only Transverse Test:

Door Only Vertical Test:

SECTION 3 COMPLIANCE TEST DATA SUMMARY

Test Vehicle:
Test Program: FMVSS 206 Compliance

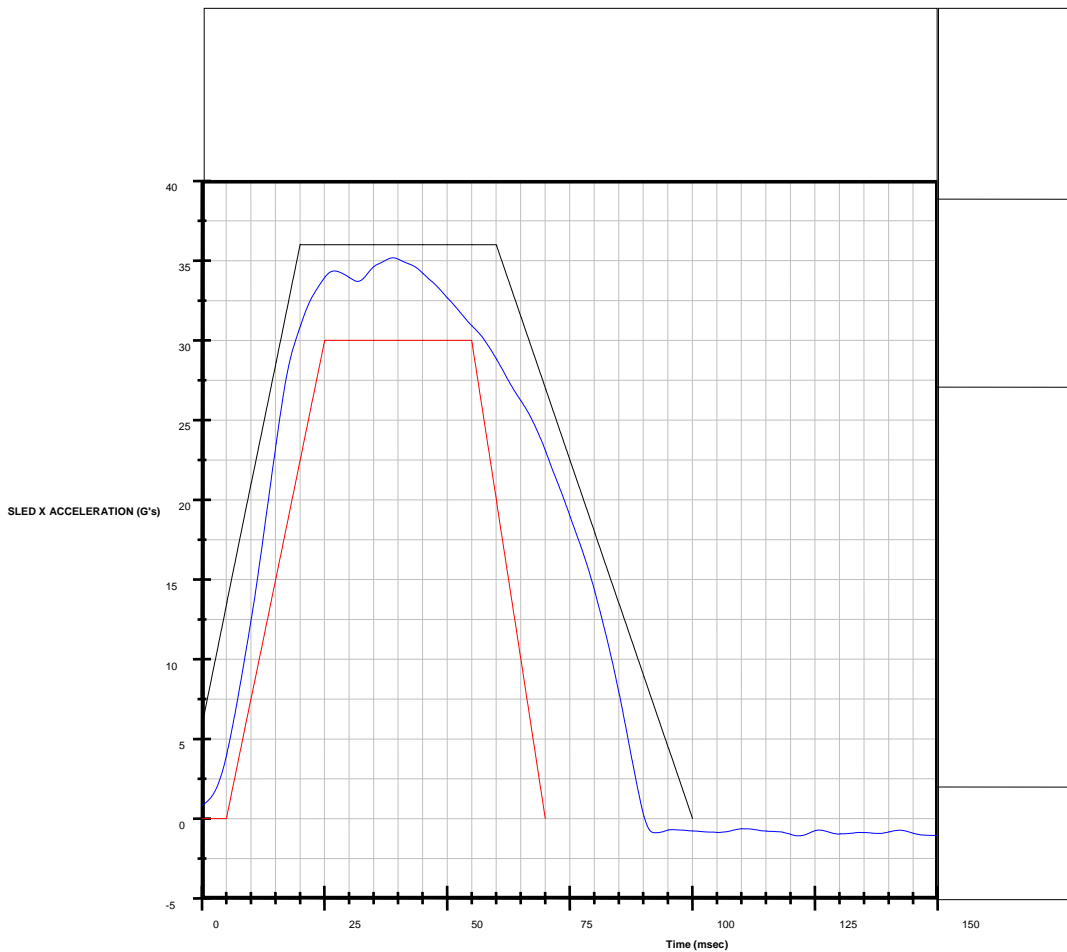
Sled Test No.
Test Date:

IMPACT PULSE DATA – VEHICLE LONGITUDINAL TEST

	Target	Actual
Peak Acceleration (g)	min. = 30 max. = 36	
Overall Velocity Change (kmph)	N/A	

Upper Bound			Lower Bound		
Point	Time (ms)	Acceleration (g)	Point	Time (ms)	Acceleration (g)
A	0	6	E	5	0
B	20	36	F	25	30
C	60	36	G	55	30
D	100	0	H	70	0

(recorded sled pulse example below)



SECTION 3...(continued)
COMPLIANCE TEST DATA SUMMARY

Test Vehicle:
 Test Program: FMVSS 206 Compliance

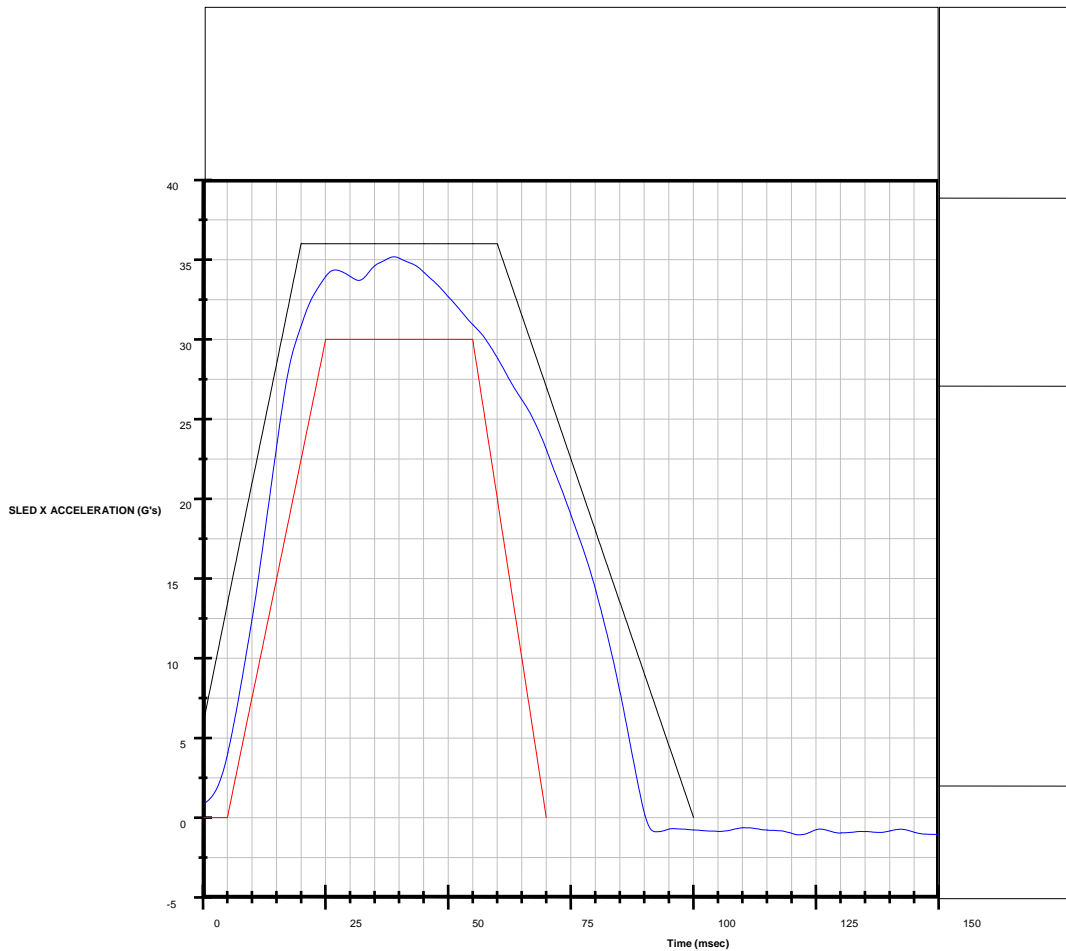
Sled Test No.
 Test Date:

IMPACT PULSE DATA – VEHICLE TRANSVERSE TEST

	Target	Actual
Peak Acceleration (g)	min. = 30 max. = 36	
Overall Velocity Change (kmph)	N/A	

Upper Bound			Lower Bound		
Point	Time (ms)	Acceleration (g)	Point	Time (ms)	Acceleration (g)
A	0	6	E	5	0
B	20	36	F	25	30
C	60	36	G	55	30
D	100	0	H	70	0

(recorded sled pulse example below)



SECTION 3...(continued)
COMPLIANCE TEST DATA SUMMARY

Test Vehicle and Door(s):
 Test Program:

FMVSS 206 Compliance

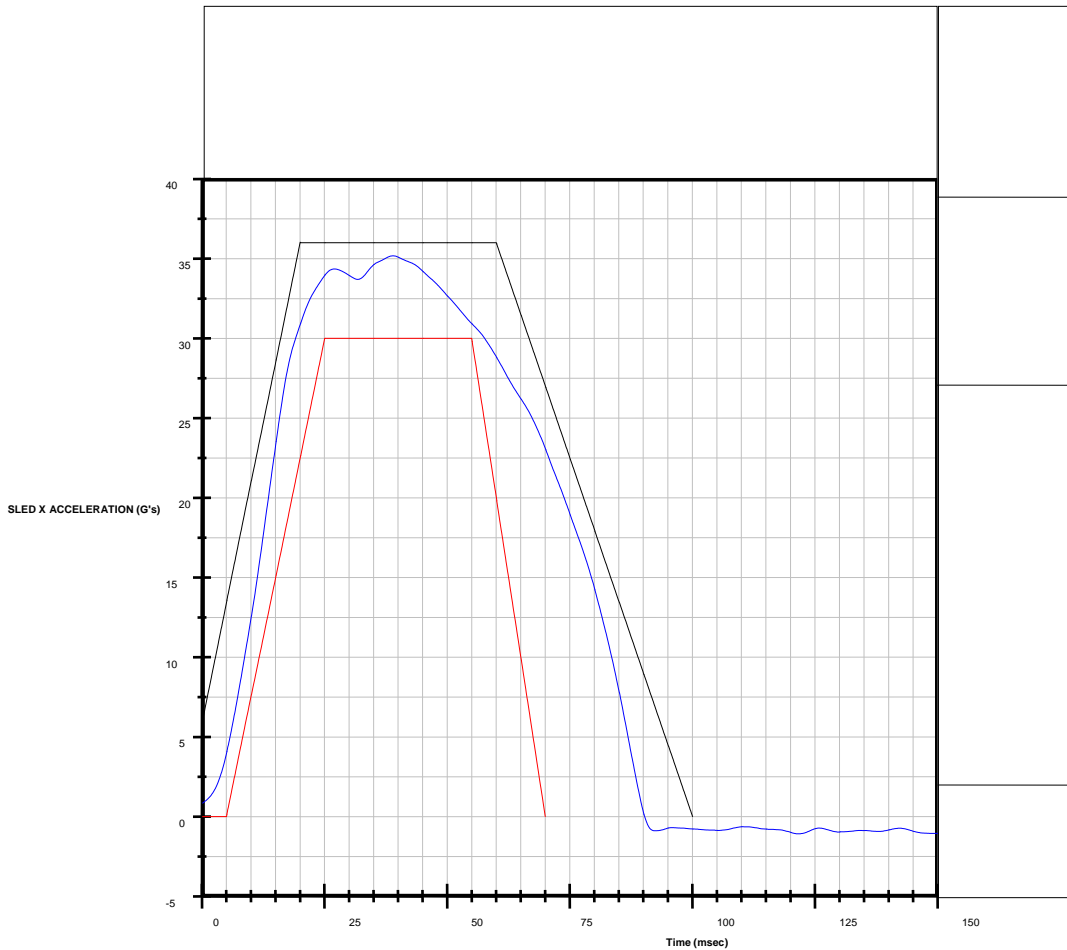
Sled Test No.
 Test Date:

IMPACT PULSE DATA – DOOR ONLY LONGITUDINAL TEST

	Target	Actual
Peak Acceleration (g)	min. = 30 max. = 36	
Overall Velocity Change (kmph)	N/A	

Upper Bound			Lower Bound		
Point	Time (ms)	Acceleration (g)	Point	Time (ms)	Acceleration (g)
A	0	6	E	5	0
B	20	36	F	25	30
C	60	36	G	55	30
D	100	0	H	70	0

(recorded sled pulse example below)



SECTION 3...(continued)
COMPLIANCE TEST DATA SUMMARY

Test Vehicle and Door(s):
 Test Program:

FMVSS 206 Compliance

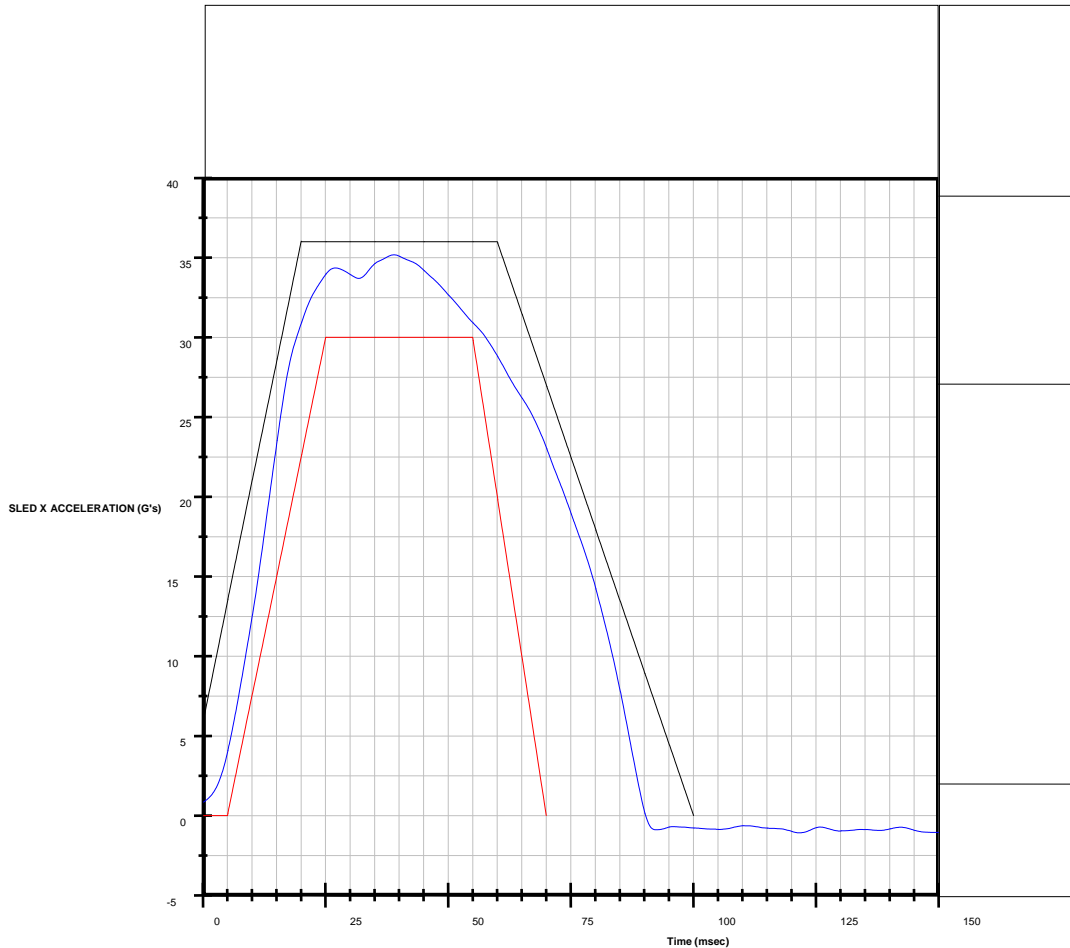
Sled Test No.
 Test Date:

IMPACT PULSE DATA – DOOR ONLY TRANSVERSE TEST

	Target	Actual
Peak Acceleration (g)	min. = 30 max. = 36	
Overall Velocity Change (kmph)	N/A	

Upper Bound			Lower Bound		
Point	Time (ms)	Acceleration (g)	Point	Time (ms)	Acceleration (g)
A	0	6	E	5	0
B	20	36	F	25	30
C	60	36	G	55	30
D	100	0	H	70	0

(recorded sled pulse example below)



SECTION 3...(continued)
COMPLIANCE TEST DATA SUMMARY

Test Vehicle and Door(s):
 Test Program:

FMVSS 206 Compliance

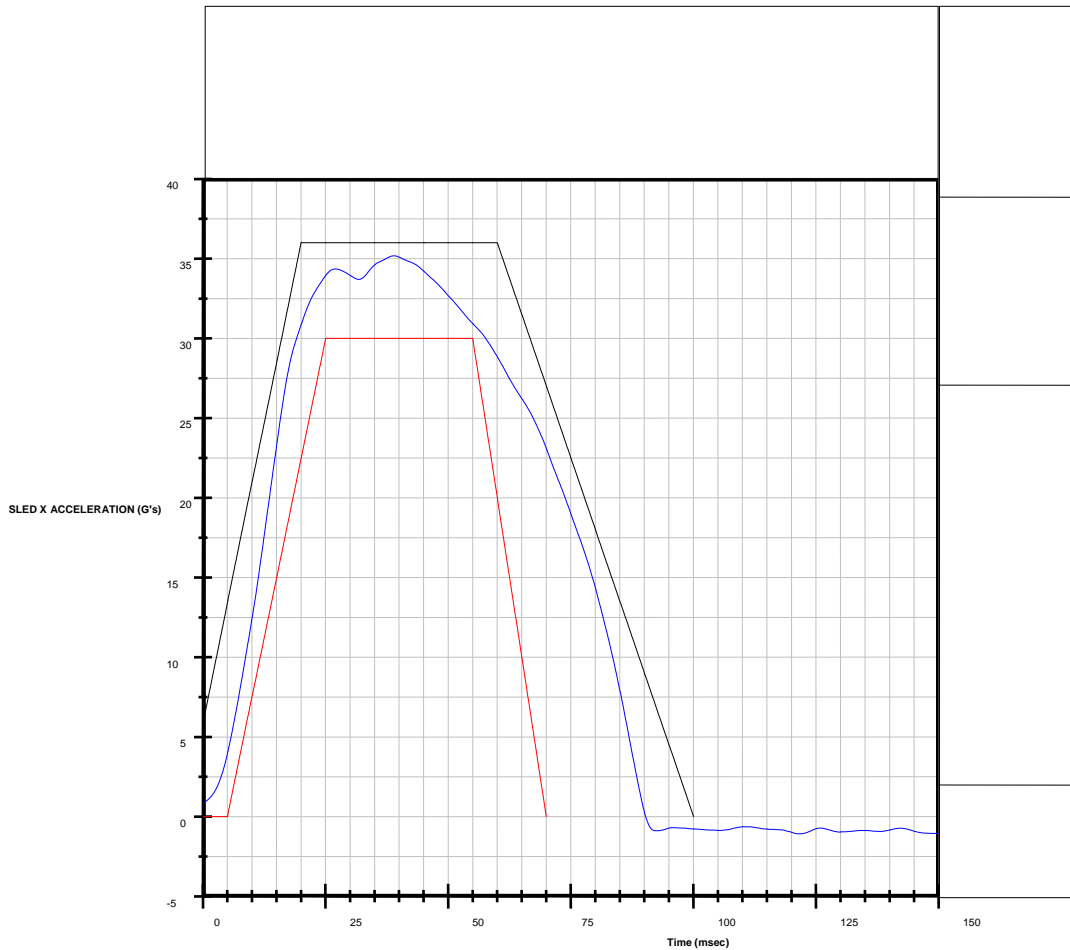
Sled Test No.
 Test Date:

IMPACT PULSE DATA – DOOR ONLY VERTICAL TEST

	Target	Actual
Peak Acceleration (g)	min. = 30 max. = 36	
Overall Velocity Change (kmph)	N/A	

Upper Bound			Lower Bound		
Point	Time (ms)	Acceleration (g)	Point	Time (ms)	Acceleration (g)
A	0	6	E	5	0
B	20	36	F	25	30
C	60	36	G	55	30
D	100	0	H	70	0

(recorded sled pulse example below)



SECTION 3...(continued)
COMPLIANCE TEST DATA SUMMARY

AMBIENT TEMPERATURE AND HUMIDITY
(Date) – VEHICLE LONGITUDINAL TEST
Time of Test - (time)

(Plot – Temperature/Time History)

SECTION 3...(continued)
COMPLIANCE TEST DATA SUMMARY

AMBIENT TEMPERATURE AND HUMIDITY

(Date) – VEHICLE TRANSVERSE TEST

Time of Test – (time)

(Plot – Temperature/Time History)

SECTION 3...(continued)
COMPLIANCE TEST DATA SUMMARY

AMBIENT TEMPERATURE AND HUMIDITY
(Date) – DOOR ONLY LONGITUDINAL TEST
Time of Test – (time)

(Plot – Temperature/Time History)

SECTION 3...(continued)
COMPLIANCE TEST DATA SUMMARY

AMBIENT TEMPERATURE AND HUMIDITY
(Date) – DOOR ONLY TRANSVERSE TEST
Time of Test – (time)

(Plot – Temperature/Time History)

SECTION 3...(continued)
COMPLIANCE TEST DATA SUMMARY

AMBIENT TEMPERATURE AND HUMIDITY

(Date) – DOOR ONLY VERTICAL TEST

Time of Test – (time)

(Plot – Temperature/Time History)

**SECTION 3...(continued)
COMPLIANCE TEST DATA SUMMARY**

Test Vehicle:
Test Program: FMVSS 206 Compliance

Sled Test Nos.
Test Dates:

Post-Test Fully Latched Assessment for Vehicle Longitudinal Test

VEHICLE LATCH LOCATION	FAILURE MODE	PASS/FAIL

Post-Test Fully Latched Assessment for Vehicle Transverse Test

VEHICLE LATCH LOCATION	FAILURE MODE	PASS/FAIL

Remarks:

**SECTION 3...(continued)
COMPLIANCE TEST DATA SUMMARY**

Test Vehicle & Door(s):
Test Program: FMVSS 206 Compliance

Sled Test Nos.
Test Dates:

Post-Test Fully Latched Inspection Assessment for Door Only Longitudinal Test

Door	FAILURE MODE	PASS/FAIL

Post-Test Fully Latched Inspection Assessment for Door Only Transverse Test

Door	FAILURE MODE	PASS/FAIL

Post-Test Fully Latched Inspection Assessment for Door Only Vertical Test

Door	FAILURE MODE	PASS/FAIL

Remarks:

SECTION 4
VEHICLE INFORMATION

Test Vehicle:
Test Program: FMVSS 206 Compliance

Sled Test No.
Test Date:

CERTIFICATION LABEL	
Vehicle Manufacturer:	
Vehicle Make/Model:	
Date of Manufacture:	
VIN:	
NHTSA No.:	
Vehicle Certified As (Pass. Car/MPV/Truck/Bus):	
Front Axle GAWR:	
Rear Axle GAWR:	
Total GVWR:	

SECTION 4... (continued)
VEHICLE INFORMATION

Test Vehicle:
Test Program: FMVSS 206 Compliance

Sled Test No.
Test Date:

TEST VEHICLE ATTITUDES – VEHICLE LONGITUDINAL TEST

	Units	As Delivered	Fully Loaded	Ready For Test*
Driver Door Sill Angle	deg			
Left Front Wheel Well Height	mm			
Right Front Wheel Well Height	mm			

*on sled buck

TEST WEIGHT – VEHICLE LONGITUDINAL TEST

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	Kg	
Weight of Test Buck	Kg	
Test Weight on Sled Carriage	Kg	

List of vehicle components removed (vehicle longitudinal test):

Remarks:

SECTION 4...(continued)
VEHICLE INFORMATION

Test Vehicle:
Test Program: FMVSS 206 Compliance

Sled Test No.
Test Date:

TEST VEHICLE ATTITUDES – VEHICLE TRANSVERSE TEST

	Units	As Delivered	Fully Loaded	Ready For Test*
Driver Door Sill Angle	deg			
Left Front Wheel Well Height	mm			
Right Front Wheel Well Height	mm			

*on sled buck

TEST WEIGHT – VEHICLE TRANSVERSE TEST

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	Kg	
Weight of Test Buck	Kg	
Test Weight on Sled Carriage	Kg	

List of vehicle components removed (vehicle transverse test):

Remarks:

SECTION 4...(continued)
VEHICLE INFORMATION

Test Vehicle and Door(s):
Test Program:

FMVSS 206 Compliance

Sled Test No.
Test Date:

TEST VEHICLE ATTITUDES – DOOR ONLY TEST

	Units	As Delivered	Fully Loaded	Ready for Measurements*
Driver Door Sill Angle	deg			
Left Front Wheel Well Height	mm			
Right Front Wheel Well Height	mm			

*ready for hinge and striker mounting point location measurements.

TEST WEIGHT – DOOR ONLY LONGITUDINAL TEST

Measured Parameter	Units	Value
Door subassembly Weight	Kg	
Weight of Test Buck	Kg	
Test Weight on Sled Carriage	Kg	

TEST WEIGHT – DOOR ONLY TRANSVERSE TEST

Measured Parameter	Units	Value
Door subassembly Weight	Kg	
Weight of Test Buck	Kg	
Test Weight on Sled Carriage	Kg	

TEST WEIGHT – DOOR ONLY VERTICAL TEST

Measured Parameter	Units	Value
Door subassembly Weight	Kg	
Weight of Test Buck	Kg	
Test Weight on Sled Carriage	Kg	

Remarks:

**SECTION 5
TEST DATA**

**DATA SHEET NO. 1
POST-TEST DOOR FULLY LATCHED ASSESSMENT**

Test Vehicle:
Test Program: FMVSS 206 Compliance

Sled Test Nos.
Test Dates:

Visual Inspection and High Speed Video Observations for Vehicle Longitudinal Test

VEHICLE DOOR LOCATION	Visual Inspection	H.S. Video Observations	PASS/ FAIL

Visual Inspection and High Speed Video Observations for Vehicle Transverse Test

VEHICLE DOOR LOCATION	Visual Inspection	H.S. Video Observations	PASS/ FAIL

Remarks:

SECTION 5... (continued)

TEST DATA

DATA SHEET NO. 1...(continued)

POST-TEST DOOR FULLY LATCHED ASSESSMENT

Test Vehicle & Door(s):

Sled Test Nos.

Test Program: FMVSS 206 Compliance

Test Dates:

Visual Inspection and High Speed Video Observations for Door Only Longitudinal Test

DOOR	Visual Inspection	H.S. Video Observations	PASS/ FAIL

Visual Inspection and High Speed Video Observations for Door Only Transverse Test

DOOR	Visual Inspection	H.S. Video Observations	PASS/ FAIL

Visual Inspection and High Speed Video Observations for Door Only Vertical Test

DOOR	Visual Inspection	H.S. Video Observations	PASS/ FAIL

Remarks:

SECTION 5...(continued)
TEST DATA

DATA SHEET NO. 1...(continued)
VEHICLE POST TEST DOOR FULLY LATCHED ASSESSMENT

Test Vehicle:
Test Program: FMVSS 206 Compliance

Sled Test Nos.
Test Dates:

Applied Force Assessment for Vehicle Longitudinal Test

LATCH LOCATION	APPLIED TEST LOAD (N)	REQUIRED LOAD (N)	FAILURE MODE*	PASS/ FAIL
Driver Door		270 ±10		
Passenger Door		270 ±10		
Left Rear Passenger Door		270 ±10		
Right Rear Passenger Door		270 ±10		
Rear Hatch		270 ±10		
Left Side Sliding Door		270 ±10		
Right Side Sliding Door		270 ±10		

Applied Force Assessment for Vehicle Transverse Test

LATCH LOCATION	APPLIED TEST LOAD (N)	REQUIRED LOAD (N)	FAILURE MODE*	PASS/ FAIL
Driver Door		270 ±10		
Passenger Door		270 ±10		
Left Rear Passenger Door		270 ±10		
Right Rear Passenger Door		270 ±10		
Rear Hatch		270 ±10		
Left Side Sliding Door		270 ±10		
Right Side Sliding Door		270 ±10		

* FAILURE MODE shall only apply when load requirements are NOT met.

Remarks:

Recorded by: _____

Date: _____

Approved by: _____

SECTION 5...(continued)

TEST DATA

DATA SHEET 2

INSTRUMENTATION CALIBRATION DATA

VEHICLE LONGITUDINAL TEST

Test Vehicle: _____ Sled Test No. _____
 Test Program: FMVSS 206 Compliance Test Date: _____

Location	Manuf.	Calibration Date	S/N	Limits	Accuracy	Cal. Freq.	Cal. Exp.
Sled Accelerometer X							
Sled Accelerometer Xr							

VEHICLE TRANSVERSE TEST

Test Vehicle: _____ Sled Test No. _____
 Test Program: FMVSS 206 Compliance Test Date: _____

Location	Manuf.	Calibration Date	S/N	Limits	Accuracy	Cal. Freq.	Cal. Exp.
Sled Accelerometer X							
Sled Accelerometer Xr							

Remarks:

Recorded by: _____

Date: _____

Approved by: _____

SECTION 5...(continued)

TEST DATA

DATA SHEET 2...(continued)

INSTRUMENTATION CALIBRATION DATA

DOOR ONLY LONGITUDINAL TEST

Test Vehicle and Door(s):
Test Program:

FMVSS 206 Compliance

Sled Test No.
Test Date:

Location	Manuf.	Calibration Date	S/N	Limits	Accuracy	Cal. Freq.	Cal. Exp.
Sled Accelerometer X							
Sled Accelerometer Xr							

DOOR ONLY TRANSVERSE TEST

Test Vehicle and Door(s):
Test Program:

FMVSS 206 Compliance

Sled Test No.
Test Date:

Location	Manuf.	Calibration Date	S/N	Limits	Accuracy	Cal. Freq.	Cal. Exp.
Sled Accelerometer X							
Sled Accelerometer Xr							

DOOR ONLY VERTICAL TEST

Test Vehicle and Door(s):
Test Program:

FMVSS 206 Compliance

Sled Test No.
Test Date:

Location	Manuf.	Calibration Date	S/N	Limits	Accuracy	Cal. Freq.	Cal. Exp.
Sled Accelerometer X							
Sled Accelerometer Xr							

Remarks:

Recorded by: _____

Date: _____

Approved by: _____

SECTION 5...(continued)
TEST DATA

DATA SHEET NO. 3

Test Vehicle:
Test Program: FMVSS 206 Compliance

Sled Test No.
Test Date:

CAMERA LOCATIONS – VEHICLE LONGITUDINAL TEST

CAMERA NO.	VIEW	LENS (mm)	SPEED (fps)

(sled test camera diagram)

SECTION 5...(continued)

TEST DATA

DATA SHEET NO. 3...(continued)

Test Vehicle:

Sled Test No.

Test Program: FMVSS 206 Compliance

Test Date:

CAMERA LOCATIONS – VEHICLE TRANSVERSE TEST

CAMERA NO.	VIEW	LENS (mm)	SPEED (fps)

(sled test camera diagram)

SECTION 5...(continued)
TEST DATA

DATA SHEET NO. 3...(continued)

Test Vehicle and Door(s):
Test Program:

FMVSS 206 Compliance

Sled Test No.
Test Date:

CAMERA LOCATIONS – DOOR ONLY LONGITUDINAL TEST

CAMERA NO.	VIEW	LENS (mm)	SPEED (fps)

CAMERA LOCATIONS – DOOR ONLY TRANSVERSE TEST

CAMERA NO.	VIEW	LENS (mm)	SPEED (fps)

CAMERA LOCATIONS – DOOR ONLY VERTICAL TEST

CAMERA NO.	VIEW	LENS (mm)	SPEED (fps)

(sled test camera diagram for each test as applicable)

Remarks:

Recorded by: _____

Date: _____

Approved by: _____

SECTION 6
TEST FAILURE DESCRIPTION

Test Vehicle:
Test Program: FMVSS 206 Compliance

Sled Test Nos.
Test Dates:

VEHICLE LONGITUDINAL TEST:

VEHICLE TRANSVERSE TEST:

SECTION 6...(continued)
TEST FAILURE DESCRIPTION

Test Vehicle & Door(s):
Test Program: FMVSS 206 Compliance

Sled Test Nos.
Test Dates:

DOOR ONLY LONGITUDINAL TEST:

DOOR ONLY TRANSVERSE TEST:

DOOR ONLY VERTICAL TEST:

16. FORMS

LABORATORY NOTICE OF TEST FAILURE TO OVSC

FMVSS 206

TEST DATE: _____

LABORATORY: _____

CONTRACT NO.: _____; DELV. ORDER NO: _____

LABORATORY PROJECT ENGINEER'S NAME: _____

VEHICLE MANUFACTURER: _____

VEHICLE MAKE, MODEL, AND YEAR: _____

TEST FAILURE DESCRIPTION: _____

FMVSS REQUIREMENT, PARAGRAPH: _____

NOTIFICATION TO NHTSA (COTR): _____

DATE: _____ BY: _____

REMARKS:

16. FORMS....Continued

MONTHLY REPORT
VEHICLE INERTIAL LOAD TEST
FMVSS No. 206

NHTSA No.	Vehicle Manufacturer	Vehicle Make/Model	Date Received	Date Test/Preparation Started	Date Test Completed	Report Sent Date

REMARKS: