SAFETY COMPLIANCE TESTING FOR FMVSS 214
SIDE IMPACT PROTECTION
INDICANT

HONDA OF AMERICA, MFG.
2009 ACURA TL
4-DOOR SEDAN

NHTSA NUMBER: C95309

PREPARED BY:
CALSPAN CORPORATION
P.O. BOX 400
BUFFALO, NEW YORK 14225

Test Date: March 12, 2009

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
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Prepared by: Vincent M. Paolini, Project Engineer
Date: April 4, 2009

Reviewed by: David J. Travale, Program Manager
Transportation Sciences Center
Date: April 4, 2009
A 55/28 km/h 90° Moving Deformable Barrier FMVSS 214 Indicant side impact was conducted on the subject 2009 Acura TL 4-Door Sedan to obtain new car assessment and research data indicative of FMVSS No. 214D performance. The test was conducted at the Calspan Corporation Transportation Sciences Center in Buffalo, New York, on March 12, 2009. The impact velocity of the Moving Deformable Barrier (MDB) was 62.5 km/h, and the ambient temperature at the struck side (driver side) of the vehicle was 22°C. The target vehicle's maximum post test static crush was 240 mm at level 3. The test vehicle's occupant performance is as follows:

<table>
<thead>
<tr>
<th></th>
<th>DRIVER</th>
<th>PASS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left Upper Rib (LUR) Accel., g</td>
<td>47.02</td>
<td>44.51</td>
</tr>
<tr>
<td>Left Lower Rib (LLR) Accel., g</td>
<td>50.16</td>
<td>47.87</td>
</tr>
<tr>
<td>Lower Spine (T₁₂) Accel., g</td>
<td>61.24</td>
<td>50.96</td>
</tr>
<tr>
<td>Thoracic Trauma Index (TTI)</td>
<td>56</td>
<td>49</td>
</tr>
<tr>
<td>Pelvis (PEV) Accel., g</td>
<td>67</td>
<td>56</td>
</tr>
<tr>
<td>HIC</td>
<td>256.6</td>
<td>436.7</td>
</tr>
</tbody>
</table>

The doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.

### Key Words
- Compliance Testing
- Side Impact Protection
- FMVSS 214
- Side Impact Dummy (SID)

### Distribution Statement
Copies of this report are available from:
NHTSA Technical Information Services
1200 New Jersey Avenue, SE
Washington, DC 20590
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</tr>
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<tr>
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</table>

<table>
<thead>
<tr>
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<th>Page No.</th>
</tr>
</thead>
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</tr>
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</tr>
<tr>
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</tr>
<tr>
<td>D</td>
<td>Test Equipment and Calibration Information D-1</td>
</tr>
</tbody>
</table>
SECTION 1
PURPOSE AND TEST PROCEDURE

PURPOSE

This side impact test is part of the FMVSS 214 Side Impact Protection Compliance Test Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-07-D-00064. The purpose of thisindicant test was to evaluate side impact protection in a 2009 Acura TL 4-Door Sedan when tested at the New Car Assessment Program (NCAP) target test velocity of 62.0 kph, which is 8 kph faster than the target velocity required by the Office of Vehicle Safety Compliance's Laboratory Test Procedure (TP-214D-08, dated December 15, 2006).
SECTION 2
SUMMARY OF FMVSS 214 INDICANT SIDE IMPACT TEST

This Side Impact Protection Indicant Test was performed at the New Car Assessment Program (NCAP) target test velocity of 62.0 kph, which is 8 kph faster than the target velocity required by the Office of Vehicle Safety Compliance’s Laboratory Test Procedure (TP-214D-08, dated December 15, 2006).

A model year 2009 Acura TL 4-Door Sedan was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 62.5 km/h. The specified impact velocity range is from 61.1 to 62.7 km/h. The test (target) vehicle was stationary and positioned 63° to the line of forward motion. The weight of the vehicle as tested was 1888.0 kg and the test weight of the MDB was 1362.5 kg. The test was conducted at the Calspan Corporation Transportation Sciences Center on March 12, 2009.

One (1) real-time motion picture camera and nine (9) high-speed motion picture cameras were used to document the impact event. The pre-test and post-test conditions were recorded by one (1) real-time motion picture camera. Camera locations and pertinent camera information are documented in the data sheets. Pre- and post-test photographs of the vehicle and Side Impact Dummies (SID/HIIIs) can be found in Appendix A.

Two 50th percentile adult male SID/HIII's were placed in the driver (P1) and left rear passenger (P4) designated seating positions according to instructions specified in the Laboratory Test Procedure for New Car Assessment Program Side Impact Testing dated July 1997. Each SID/HIII was instrumented in the following locations:

- Left Upper Rib (LUR) uni-axial accelerometer (Y-axis primary and redundant)
- Left Lower Rib (LLR) uni-axial accelerometer (Y-axis primary and redundant)
- Lower Thoracic Spine (T12) uni-axial accelerometer (Y-axis primary and redundant)
- Pelvic (PEV) section uni-axial accelerometer (Y-axis primary and redundant)
- Head Center of Gravity (CG) tri-axial accelerometers (X, Y and Z axes primary and redundant)
- Upper Neck load cell (Fx, Fy, Fz, Mx, My, Mz)

The test vehicle was instrumented with twenty-one (21) structural accelerometers and the MDB was instrumented with five (5) accelerometers.

2.2 GENERAL COMMENTS

The test vehicle sustained a maximum static crush of 240 mm at level 3, 1650 mm rearward of the left vertical impact point. The driver and passenger SID/HIII's, Serial Nos. 270 and 269 respectively, were calibrated just prior to this test.

Test data and observations are presented in this section of the report. Appendix A contains the still photograph prints. Appendix B contains the driver and passenger SID/HIII's, vehicle, and MDB response data traces. Appendix C contains the SID/HIII's configuration and performance verification data. Appendix D contains the test equipment information.
The occupant data is summarized below:

<table>
<thead>
<tr>
<th>ATD position</th>
<th>HIC(36)</th>
<th>$T_1$</th>
<th>$T_2$</th>
<th>TTI (G's)</th>
<th>Peak Pelvis (G’s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver</td>
<td>256.6</td>
<td>38.5</td>
<td>66.7</td>
<td>56</td>
<td>67</td>
</tr>
<tr>
<td>Passenger</td>
<td>436.7</td>
<td>49.5</td>
<td>65.8</td>
<td>49</td>
<td>56</td>
</tr>
</tbody>
</table>

**SUPPLEMENTAL RESTRAINT INFORMATION**

<table>
<thead>
<tr>
<th>Restraint Type</th>
<th>Left Front (Driver)</th>
<th>Left Rear (Passenger)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Installed</td>
<td>Deployed</td>
</tr>
<tr>
<td>Front Airbag</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Side Torso Airbag</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Side Head/Torso Combination Airbag</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Curtain Airbag</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

The test instrumentation data listed in Appendix B can be found on the NHTSA website: [www.nhtsa.dot.gov](http://www.nhtsa.dot.gov).
DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2009 Acura TL  NHTSA No.  C95309
Test Program: FMVSS 214 Indicant Side Impact  Test Date: March 12, 2009

TEST VEHICLE INFORMATION AND VEHICLE OPTIONS

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>TL</td>
<td>Model</td>
<td>TL</td>
</tr>
<tr>
<td>Body Style</td>
<td>4-Door Sedan</td>
<td>Body Style</td>
<td>4-Door Sedan</td>
</tr>
<tr>
<td>NHTSA No.</td>
<td>C95309</td>
<td>NHTSA No.</td>
<td>C95309</td>
</tr>
<tr>
<td>VIN</td>
<td>19UUA86289A002321</td>
<td>VIN</td>
<td>19UUA86289A002321</td>
</tr>
<tr>
<td>Color</td>
<td>Black</td>
<td>Color</td>
<td>Black</td>
</tr>
<tr>
<td>Engine Disp.(L)</td>
<td>3.5</td>
<td>Engine Disp.(L)</td>
<td>3.5</td>
</tr>
<tr>
<td>Engine Cylinders</td>
<td>6</td>
<td>Engine Cylinders</td>
<td>6</td>
</tr>
<tr>
<td>Engine Placement</td>
<td>Lateral</td>
<td>Engine Placement</td>
<td>Lateral</td>
</tr>
<tr>
<td>Transmission Type</td>
<td>Automatic</td>
<td>Transmission Type</td>
<td>Automatic</td>
</tr>
<tr>
<td>Transmission Speeds</td>
<td>5</td>
<td>Transmission Speeds</td>
<td>5</td>
</tr>
<tr>
<td>Final Drive</td>
<td>Front</td>
<td>Final Drive</td>
<td>Front</td>
</tr>
<tr>
<td>Air Conditioning</td>
<td>Yes</td>
<td>Air Conditioning</td>
<td>Yes</td>
</tr>
<tr>
<td>Power Steering</td>
<td>Yes</td>
<td>Power Steering</td>
<td>Yes</td>
</tr>
<tr>
<td>Power Brakes</td>
<td>Yes</td>
<td>Power Brakes</td>
<td>Yes</td>
</tr>
<tr>
<td>Delivery Date</td>
<td>2/10/09</td>
<td>Delivery Date</td>
<td>2/10/09</td>
</tr>
<tr>
<td>Odometer Reading (km)</td>
<td>21</td>
<td>Odometer Reading (km)</td>
<td>21</td>
</tr>
<tr>
<td>Dealer</td>
<td>Ray Laks Acura</td>
<td>Dealer</td>
<td>Ray Laks Acura</td>
</tr>
<tr>
<td></td>
<td>Williamsville, NY 14221</td>
<td></td>
<td>Williamsville, NY 14221</td>
</tr>
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</table>

DATA FROM CERTIFICATION LABEL

<table>
<thead>
<tr>
<th>Manufactured By</th>
<th>Honda of America Mfg.</th>
<th>GVWR (kg)</th>
<th>2130</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Manufacture</td>
<td>9/08</td>
<td>GAWR Front (kg)</td>
<td>1165</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GAWR Rear (kg)</td>
<td>975</td>
</tr>
</tbody>
</table>

VEHICLE CAPACITY DATA

<table>
<thead>
<tr>
<th>Measured Parameter</th>
<th>Front</th>
<th>Rear</th>
<th>Third</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Seats</td>
<td>Bucket</td>
<td>Bench</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number Of Occupants</td>
<td>2</td>
<td>3</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Capacity Wt. (VCW) (kg)</td>
<td></td>
<td></td>
<td>385.0</td>
<td></td>
</tr>
<tr>
<td>Cargo Wt. (RCLW) (kg)</td>
<td></td>
<td></td>
<td>44.8</td>
<td></td>
</tr>
</tbody>
</table>
## DATA SHEET NO. 1 (continued)

**GENERAL TEST AND VEHICLE PARAMETER DATA**

<table>
<thead>
<tr>
<th>Test Vehicle:</th>
<th>2009 Acura TL</th>
</tr>
</thead>
<tbody>
<tr>
<td>NHTSA No.:</td>
<td>C95309</td>
</tr>
<tr>
<td>Test Program:</td>
<td>FMVSS 214 Indicant Side Impact</td>
</tr>
<tr>
<td>Test Date:</td>
<td>March 12, 2009</td>
</tr>
</tbody>
</table>

### TEST VEHICLE WEIGHTS

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<thead>
<tr>
<th>Units</th>
<th>As Delivered (UVW) (Axle)</th>
<th>Fully Loaded (Axle)</th>
<th>As Tested (ATW) (Axle)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Front</td>
<td>Rear</td>
<td>Total</td>
</tr>
<tr>
<td>Left kg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>522.5</td>
<td>329.0</td>
<td>573.5</td>
</tr>
<tr>
<td>Right kg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>509.0</td>
<td>326.5</td>
<td>519.0</td>
</tr>
<tr>
<td>Ratio %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>61.1</td>
<td>38.9</td>
<td>57.5</td>
</tr>
<tr>
<td>Totals kg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1031.5</td>
<td>655.5</td>
<td>1687.0</td>
</tr>
</tbody>
</table>

### TARGET TEST WEIGHT CALCULATION

<table>
<thead>
<tr>
<th>Measured Parameter</th>
<th>Units</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Delivered Weight (UVW)</td>
<td>kg</td>
<td>1687.0</td>
</tr>
<tr>
<td>Weight of 2 P572M ATDs (81.2 kg each)</td>
<td>kg</td>
<td>162.4</td>
</tr>
<tr>
<td>Rated Cargo/Luggage Weight (RCLW)</td>
<td>kg</td>
<td>44.8</td>
</tr>
<tr>
<td>Calculated Vehicle Target Weight (TVTW)</td>
<td>kg</td>
<td>1894.2</td>
</tr>
</tbody>
</table>

* Actual As Tested Weight (ATW) will be TVTW -4.5/-9.1 kg

- Weight of Ballast (including instrumentation package and cameras): 38.6 kg

### TEST VEHICLE ATTITUDES

<table>
<thead>
<tr>
<th>Units</th>
<th>LF</th>
<th>RF</th>
<th>LR</th>
<th>RR</th>
</tr>
</thead>
<tbody>
<tr>
<td>As Delivered mm</td>
<td>720</td>
<td>720</td>
<td>720</td>
<td>725</td>
</tr>
<tr>
<td>Fully Loaded mm</td>
<td>708</td>
<td>716</td>
<td>691</td>
<td>705</td>
</tr>
<tr>
<td>As Tested mm</td>
<td>711</td>
<td>716</td>
<td>699</td>
<td>705</td>
</tr>
</tbody>
</table>

### TEST VEHICLE VERTICAL IMPACT LINE AND CG

<table>
<thead>
<tr>
<th>Measurement Description</th>
<th>Units</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Vehicle Wheel Base</td>
<td>mm</td>
<td>2777</td>
</tr>
<tr>
<td>Target Impact Point Aft of Front Axle</td>
<td>mm</td>
<td>449</td>
</tr>
<tr>
<td>Actual Impact Point Aft of Front Axle</td>
<td>mm</td>
<td>462</td>
</tr>
<tr>
<td>As Tested CG (aft of front axle)</td>
<td>mm</td>
<td>1174</td>
</tr>
</tbody>
</table>
DATA SHEET NO. 2
TEST VEHICLE TIRE INFORMATION

Test Vehicle: 2009 Acura TL
Test Program: FMVSS 214 Indicant Side Impact
Test Date: March 12, 2009

NHTSA No. C95309

DATA FROM TIRE PLACARD

<table>
<thead>
<tr>
<th>Measured Parameter</th>
<th>Front</th>
<th>Rear</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Tire Pressure (kPa)</td>
<td>275</td>
<td>275</td>
</tr>
<tr>
<td>Cold / Test Pressure (kPa)</td>
<td>220</td>
<td>220</td>
</tr>
<tr>
<td>Recommended Tire Size</td>
<td>P245/50R17</td>
<td>P245/50R17</td>
</tr>
<tr>
<td>Tire Size on Vehicle</td>
<td>P245/50R17</td>
<td>P245/50R17</td>
</tr>
<tr>
<td>Tire Manufacturer</td>
<td>Bridgestone</td>
<td>Bridgestone</td>
</tr>
<tr>
<td>Tire Name</td>
<td>Turanza EL400</td>
<td>Turanza EL400</td>
</tr>
<tr>
<td>Tire Type</td>
<td>Passenger</td>
<td>Passenger</td>
</tr>
<tr>
<td>Tire Width (mm)</td>
<td>245</td>
<td>245</td>
</tr>
<tr>
<td>Ratio of Height to Width (aspect ratio)</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Radial</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Wheel Diameter</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>Load Index &amp; Speed Symbol</td>
<td>98V</td>
<td>98V</td>
</tr>
<tr>
<td>Treadwear</td>
<td>260</td>
<td>260</td>
</tr>
<tr>
<td>Traction Grade</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Temperature Grade</td>
<td>A</td>
<td>A</td>
</tr>
</tbody>
</table>
DATA SHEET NO. 3  
TEST VEHICLE INFORMATION

Test Vehicle: 2009 Acura TL  
Test Program: FMVSS 214 Indicant Side Impact  
NHTSA No.: C95309  
Test Date: March 12, 2009

NORMAL DESIGN RIDING POSITION
The driver and passenger seat back is positioned to the manufacturer's designated angle.

SEAT BACK POSITION

<table>
<thead>
<tr>
<th>Test Detent (forward-most detent defined as 0)</th>
<th>Driver Seat</th>
<th>Rear Seat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angle (deg. from forward-most locking position)</td>
<td>Not Applicable</td>
<td>Not Adjustable</td>
</tr>
<tr>
<td>Alternative Measurements to Verify Test Position</td>
<td>Sunvisor post to head restraint post = 630 mm</td>
<td>Not Adjustable</td>
</tr>
</tbody>
</table>

SEAT FORE/AFT POSITIONS
The total seat travel was measured from forward most position to rearmost position irrespective of vertical seat height in those positions. The seat was set at the longitudinal mid position with vertical adjustment at the lowest position obtainable for both the driver and passenger.

SEAT FORE/AFT POSITION

<table>
<thead>
<tr>
<th></th>
<th>Driver Seat</th>
<th>Rear Seat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Fore/Aft Travel (A) (mm)</td>
<td>292</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Test Position (B) (mm)</td>
<td>146</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Test Detent (forward-most detent defined as 0)</td>
<td>Not Applicable (Power)</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Total Number of Detents (including 0)</td>
<td>Not Applicable (Power)</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>
**DATA SHEET NO. 3 (CONTINUED)**

**TEST VEHICLE INFORMATION**

Test Vehicle: 2009 Acura TL  
NHTSA No. C95309  
Test Program: FMVSS 214 Indicant Side Impact  
Test Date: March 12, 2009

**FUEL SYSTEM INFORMATION**

The test vehicle is equipped with an electric fuel pump. The fuel pump operates for approximately two seconds after the ignition is placed in the “ON” position, after which the fuel pump automatically shuts off. The fuel filler door is located on the left rear fender. The standard fuel tank occupies the area under the rear seat.

![Fuel Tank Assembly Diagram]

**FUEL TANK CAPACITY**

<table>
<thead>
<tr>
<th></th>
<th>Liters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usable Capacity of “Standard” Fuel Tank</td>
<td>70.0</td>
</tr>
<tr>
<td>Usable Capacity of “Optional” Fuel Tank</td>
<td>--</td>
</tr>
<tr>
<td>Stoddard Used For Test (92%-94% of Fuel Tank Usable Capacity)</td>
<td>64.7</td>
</tr>
</tbody>
</table>

**STEERING COLUMN ADJUSTMENT**

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. An aluminum plate is placed across the rim of the steering wheel, an inclinometer is placed on the plate and the angle is measured.

![Steering Column Assembly Diagram]

**STEERING COLUMN POSITION**

<table>
<thead>
<tr>
<th></th>
<th>Fore/Aft Position (mm)</th>
<th>Tilt (degrees)</th>
<th>Tilt (detent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lowermost Position No. 1</td>
<td>0</td>
<td>17.5</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Geometric Center Position No. 2</td>
<td>20</td>
<td>20.2</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Uppermost Position No. 3</td>
<td>40</td>
<td>22.9</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>
DATA SHEET NO. 4
MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS

Test Vehicle: 2009 Acura TL  NHTSA No. C95309
Test Program: FMVSS 214 Indicant Side Impact  Test Date: March 12, 2009

MDB SPECIFICATIONS

<table>
<thead>
<tr>
<th>Measurement Description</th>
<th>Length (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Width of Framework Carriage</td>
<td>1250</td>
</tr>
<tr>
<td>Overall Length Including Honeycomb Face</td>
<td>4120</td>
</tr>
<tr>
<td>Wheel base of Framework Carriage</td>
<td>2590</td>
</tr>
<tr>
<td>Tread of Framework Carriage (front &amp; rear)</td>
<td>1875</td>
</tr>
<tr>
<td>C.G. Location aft of Front Axle</td>
<td>1104</td>
</tr>
</tbody>
</table>

MDB WEIGHTS

<table>
<thead>
<tr>
<th>Units</th>
<th>Front Axle</th>
<th>Rear Axle</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left</td>
<td>kg</td>
<td>409.5</td>
<td>281.5</td>
</tr>
<tr>
<td>Right</td>
<td>kg</td>
<td>372.5</td>
<td>299.0</td>
</tr>
<tr>
<td>Ratio</td>
<td>%</td>
<td>57.4</td>
<td>42.6</td>
</tr>
<tr>
<td>Totals</td>
<td>kg</td>
<td>782.0</td>
<td>580.5</td>
</tr>
</tbody>
</table>

MDB SPEED AND IMPACT ANGLE DATA

<table>
<thead>
<tr>
<th>Measured Parameter</th>
<th>Units</th>
<th>Requirement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trap No. 1 Velocity (Primary)</td>
<td>km/h</td>
<td>61.1 to 62.7</td>
<td>62.5</td>
</tr>
<tr>
<td>Trap No. 2 Velocity (Redundant)</td>
<td>km/h</td>
<td>61.1 to 62.7</td>
<td>62.5</td>
</tr>
<tr>
<td>Impact angle with respect to impactor</td>
<td>º</td>
<td>88.5º to 91.5º</td>
<td>90.7</td>
</tr>
</tbody>
</table>

POST TEST OBSERVATIONS

MDB LEFT EDGE IMPACT POINT DATA

<table>
<thead>
<tr>
<th>Measured Parameter</th>
<th>Units</th>
<th>Requirement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizontal Offset</td>
<td>mm</td>
<td>+/- 50</td>
<td>13 mm rearward</td>
</tr>
<tr>
<td>Vertical Offset</td>
<td>mm</td>
<td>+/-20</td>
<td>12 mm above</td>
</tr>
</tbody>
</table>


DATA SHEET NO. 5
POST TEST OBSERVATIONS

Test Vehicle: 2009 Acura TL NHTSA No. C95309
Test Program: FMVSS 214 Indicant Side Impact Test Date: March 12, 2009

TEST DUMMY INFORMATION AND CONTACT POINTS

<table>
<thead>
<tr>
<th>Description</th>
<th>Front Seat SID/HIII</th>
<th>Rear Seat SID/HIII</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dummy Type / Serial No.</td>
<td>SID/HIII / 270</td>
<td>SID/HIII / 269</td>
</tr>
<tr>
<td>Head Contact</td>
<td>Side Curtain Airbag</td>
<td>Side Curtain Airbag/Side Header</td>
</tr>
<tr>
<td>Upper Torso Contact</td>
<td>Side Torso Airbag</td>
<td>Rear door trim</td>
</tr>
<tr>
<td>Lower Torso Contact</td>
<td>Side Torso Airbag</td>
<td>Rear door trim</td>
</tr>
<tr>
<td>Left Knee Contact</td>
<td>Front door trim</td>
<td>No Contact</td>
</tr>
<tr>
<td>Right Knee Contact</td>
<td>No Contact</td>
<td>No Contact</td>
</tr>
</tbody>
</table>

POST TEST DOOR OPENING AND SEAT TRACK INFORMATION

<table>
<thead>
<tr>
<th>Description</th>
<th>Front</th>
<th>Rear</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locked/Unlocked Doors</td>
<td>Doors were unlocked</td>
<td>Doors were unlocked</td>
</tr>
<tr>
<td>Left Side Door Opening</td>
<td>Door remained closed and latched</td>
<td>Door remained closed and latched</td>
</tr>
<tr>
<td>Right Side Door Opening</td>
<td>Door remained closed and latched; Door opened without tools</td>
<td>Door remained closed and latched; Door opened without tools</td>
</tr>
<tr>
<td>Seat Movement</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Seat Back Failure</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

POST TEST STRUCTURAL OBSERVATIONS

<table>
<thead>
<tr>
<th>Critical Areas of Performance</th>
<th>Observations and Conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pillar Performance</td>
<td>No Separation</td>
</tr>
<tr>
<td>Sill Separation</td>
<td>None</td>
</tr>
<tr>
<td>Windshield Damage</td>
<td>Minor cracks in Upper left portion of windshield</td>
</tr>
<tr>
<td>Window Damage</td>
<td>Left Front Window Shattered</td>
</tr>
<tr>
<td>Other Notable Effects</td>
<td>None</td>
</tr>
</tbody>
</table>

SUPPLEMENTAL RESTRAINT INFORMATION

<table>
<thead>
<tr>
<th>Restraint Type</th>
<th>Left Front (Driver)</th>
<th>Left Rear (Passenger)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Installed</td>
<td>Deployed</td>
</tr>
<tr>
<td>Front Airbag</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Side Torso Airbag</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Side Head/Torso Combination Airbag</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Curtain Airbag</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
DATA SHEET NO. 6

VEHICLE PRE-TEST AND POST-TEST MEASUREMENTS

Test Vehicle: 2009 Acura TL  
Test Program: FMVSS 214 Indicant Side Impact  
NHTSA No. C95309  
Test Date: March 12, 2009

All Measurements in mm

<table>
<thead>
<tr>
<th>Code</th>
<th>Measurement Description</th>
<th>Pre-Test (delivered)</th>
<th>Pre-Test (as tested)</th>
<th>Post-Test (as tested)</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Wheelbase</td>
<td>2777</td>
<td>2777</td>
<td>2774</td>
<td>3</td>
</tr>
<tr>
<td>B</td>
<td>Front Axle to FSOV</td>
<td>1049</td>
<td>1049</td>
<td>1057</td>
<td>-8</td>
</tr>
<tr>
<td>C</td>
<td>Rear Axle to RSOV</td>
<td>1143</td>
<td>1143</td>
<td>1137</td>
<td>6</td>
</tr>
<tr>
<td>D</td>
<td>Total Length at Centerline</td>
<td>4969</td>
<td>4969</td>
<td>4968</td>
<td>1</td>
</tr>
<tr>
<td>E</td>
<td>Front Bumper Thickness</td>
<td>175</td>
<td>175</td>
<td>175</td>
<td>0</td>
</tr>
<tr>
<td>F</td>
<td>Front Bumper Bottom to Ground</td>
<td>330</td>
<td>328</td>
<td>329</td>
<td>-1</td>
</tr>
<tr>
<td>G</td>
<td>Sill Height at Front Wheel Well</td>
<td>178</td>
<td>164</td>
<td>180</td>
<td>-16</td>
</tr>
<tr>
<td>H</td>
<td>Sill Height at Front Door Leading Edge</td>
<td>177</td>
<td>163</td>
<td>190</td>
<td>-27</td>
</tr>
<tr>
<td>I</td>
<td>Sill Height at &quot;B&quot; Pillar</td>
<td>179</td>
<td>157</td>
<td>199</td>
<td>-42</td>
</tr>
<tr>
<td>J1</td>
<td>Sill Height at Rear Wheel Well</td>
<td>178</td>
<td>152</td>
<td>164</td>
<td>-12</td>
</tr>
<tr>
<td>J2</td>
<td>Pinch Weld Height at Rear Wheel Well</td>
<td>182</td>
<td>156</td>
<td>170</td>
<td>-14</td>
</tr>
<tr>
<td>K</td>
<td>Sill Height Aft of Rear Wheel Well</td>
<td>248</td>
<td>217</td>
<td>250</td>
<td>-33</td>
</tr>
<tr>
<td>L</td>
<td>Rear Bumper Thickness</td>
<td>210</td>
<td>210</td>
<td>210</td>
<td>0</td>
</tr>
<tr>
<td>M</td>
<td>Rear Bumper Bottom to Ground</td>
<td>318</td>
<td>285</td>
<td>340</td>
<td>-55</td>
</tr>
<tr>
<td>N</td>
<td>Sill Height to Window Bottom Sill</td>
<td>706</td>
<td>706</td>
<td>633</td>
<td>73</td>
</tr>
<tr>
<td>O</td>
<td>Front Door Leading Edge to Impact CL</td>
<td>811</td>
<td>811</td>
<td>790</td>
<td>21</td>
</tr>
<tr>
<td>P</td>
<td>Rear Door Trailing Edge to Impact CL</td>
<td>1162</td>
<td>1162</td>
<td>1114</td>
<td>48</td>
</tr>
<tr>
<td>Q</td>
<td>Front Window Opening</td>
<td>423</td>
<td>423</td>
<td>397</td>
<td>26</td>
</tr>
<tr>
<td>R</td>
<td>Right Side Length</td>
<td>4746</td>
<td>4746</td>
<td>4749</td>
<td>-3</td>
</tr>
<tr>
<td>S</td>
<td>Left Side Length</td>
<td>4744</td>
<td>4744</td>
<td>4740</td>
<td>4</td>
</tr>
<tr>
<td>T</td>
<td>Vehicle Width at &quot;B&quot; Post</td>
<td>1859</td>
<td>1859</td>
<td>1664</td>
<td>195</td>
</tr>
</tbody>
</table>
DATA SHEET NO. 7
SID/HIII LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2009 Acura TL  NHTSA No. C95309
Test Program: FMVSS 214 Indicant Side Impact  Test Date: March 12, 2009

### Dimension Measurements

<table>
<thead>
<tr>
<th>Measurement Description</th>
<th>Driver S/N 270</th>
<th>Passenger S/N 269</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length (mm)</td>
<td>Angle (°)</td>
</tr>
<tr>
<td>Head to Header (HH)</td>
<td>366</td>
<td></td>
</tr>
<tr>
<td>Head to Windshield (HW)</td>
<td>650</td>
<td></td>
</tr>
<tr>
<td>Head to Roof (HZ)</td>
<td>192</td>
<td>144</td>
</tr>
<tr>
<td>Nose to Rim/Nose to Seatback (NR)</td>
<td>424</td>
<td>631</td>
</tr>
<tr>
<td>Chest to Dash or Seatback (CD)</td>
<td>532</td>
<td>553</td>
</tr>
<tr>
<td>Chest to Steering Wheel (CS)</td>
<td>353</td>
<td></td>
</tr>
<tr>
<td>Left Knee to Dash or Seatback (KDL)</td>
<td>192</td>
<td>28</td>
</tr>
<tr>
<td>Right Knee to Dash or Seatback (KDR)</td>
<td>171</td>
<td>25</td>
</tr>
<tr>
<td>Pelvic Angle (PA)</td>
<td>23.3</td>
<td>24.2</td>
</tr>
<tr>
<td>H-Point to Striker (X-Axis) (PHX)</td>
<td>189</td>
<td>170</td>
</tr>
<tr>
<td>H-Point to Striker (Z-Axis) (PHZ)</td>
<td>218</td>
<td>242</td>
</tr>
</tbody>
</table>
DATA SHEET NO. 8
SID/HIII LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2009 Acura TL  
NHTSA No.: C95309
Test Program: FMVSS 214 Indicant Side Impact  
Test Date: March 12, 2009

FRONT VIEW OF DUMMY

<table>
<thead>
<tr>
<th>Code</th>
<th>Measurement Description</th>
<th>Units</th>
<th>Driver S/N 270</th>
<th>Passenger S/N 269</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR</td>
<td>Head to Side Header</td>
<td>mm</td>
<td>207</td>
<td>192</td>
</tr>
<tr>
<td>HS</td>
<td>Head to Side Window</td>
<td>mm</td>
<td>323</td>
<td>331</td>
</tr>
<tr>
<td>AD₁</td>
<td>Arm to Door (at upper rib level)</td>
<td>mm</td>
<td>124</td>
<td>115</td>
</tr>
<tr>
<td>AD₂</td>
<td>Arm to Door (at lower rib level)</td>
<td>mm</td>
<td>133</td>
<td>112</td>
</tr>
<tr>
<td>HD</td>
<td>H-Point to Door</td>
<td>mm</td>
<td>180</td>
<td>181</td>
</tr>
</tbody>
</table>
DATA SHEET NO. 9

VEHICLE SIDE MEASUREMENTS

Test Vehicle: 2009 Acura TL  NHTSA No. C95309
Test Program: FMVSS 214 Indicant Side Impact  Test Date: March 12, 2009

Measurements are taken with vehicle in the as tested condition.
Measurements along the vertical 750 mm.
All measurements below in mm.

<table>
<thead>
<tr>
<th>Level</th>
<th>Measurement Description</th>
<th>Maximum Exterior Static Crush</th>
<th>Height Above Ground</th>
<th>Distance From Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sill Top</td>
<td>8</td>
<td>218</td>
<td>900</td>
</tr>
<tr>
<td>2</td>
<td>Occupant H-Point</td>
<td>229</td>
<td>457</td>
<td>1200</td>
</tr>
<tr>
<td>3</td>
<td>Mid Door</td>
<td>240</td>
<td>616</td>
<td>1650</td>
</tr>
<tr>
<td>4</td>
<td>Window Sill</td>
<td>221</td>
<td>848</td>
<td>900</td>
</tr>
<tr>
<td>5</td>
<td>Window</td>
<td>29</td>
<td>1362</td>
<td>1200</td>
</tr>
<tr>
<td></td>
<td>Maximum Penetration</td>
<td>240</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All Measurements Shown in mm

LEFT SIDE VIEW

Measurements are taken with vehicle in the as tested condition. Measurements along the vertical 750 mm. All measurements below in mm.
### DATA SHEET NO. 10

#### VEHICLE EXTERIOR CRUSH PROFILES

**Test Vehicle:** 2009 Acura TL  
**Test Program:** FMVSS 214 Indicant Side Impact  
**NHTSA No.:** C95309  
**Test Date:** March 12, 2009

---

**Distance in Millimeters (mm) from Impact Point**

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>HEIGHT (mm)</th>
<th>PRE</th>
<th>POST</th>
<th>SIDE</th>
<th>POST</th>
<th>SILL CRUSH</th>
<th>H POST</th>
<th>POST</th>
<th>MID</th>
<th>POST</th>
<th>POST</th>
<th>SILL CRUSH</th>
<th>TOP POST</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEVEL 1</td>
<td>218</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>N/A</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>N/A</td>
<td>-</td>
</tr>
<tr>
<td>LEVEL 2</td>
<td>457</td>
<td>109</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>N/A</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>N/A</td>
<td>-</td>
</tr>
<tr>
<td>LEVEL 3</td>
<td>616</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>N/A</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>N/A</td>
<td>-</td>
</tr>
<tr>
<td>LEVEL 4</td>
<td>848</td>
<td>132</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>N/A</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>N/A</td>
<td>-</td>
</tr>
<tr>
<td>LEVEL 5</td>
<td>1362</td>
<td>-</td>
<td>7.5</td>
<td>-</td>
<td>-</td>
<td>N/A</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>N/A</td>
<td>-</td>
</tr>
</tbody>
</table>

**NOTE:** All dimensions are in millimeters with a tolerance of ±3 mm.
## DATA SHEET NO. 11
### VEHICLE DAMAGE PROFILE DISTANCES

**Test Vehicle:** 2009 Acura TL  
**NHTSA No.:** C95309  
**Test Program:** FMVSS 214 Indicant Side Impact  
**Test Date:** March 12, 2009

<table>
<thead>
<tr>
<th>DPD</th>
<th>Distance from Impact Point in mm</th>
<th>Level</th>
<th>Pre-Test (mm)</th>
<th>Post-Test (mm)</th>
<th>Max Static Crush (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (LR)</td>
<td>2400</td>
<td>4</td>
<td>123</td>
<td>133</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>1920</td>
<td>3</td>
<td>75</td>
<td>228</td>
<td>153</td>
</tr>
<tr>
<td>3</td>
<td>1440</td>
<td>3</td>
<td>75</td>
<td>304</td>
<td>229</td>
</tr>
<tr>
<td>4</td>
<td>960</td>
<td>4</td>
<td>73</td>
<td>290</td>
<td>217</td>
</tr>
<tr>
<td>5</td>
<td>480</td>
<td>3</td>
<td>73</td>
<td>279</td>
<td>206</td>
</tr>
<tr>
<td>6 (LF)</td>
<td>0</td>
<td>4</td>
<td>151</td>
<td>163</td>
<td>12</td>
</tr>
</tbody>
</table>

Reference plane is parallel to test vehicle longitudinal centerline.  
Given dimensions = Reference plane to vehicle body.
DATA SHEET NO. 12

DEFORMABLE BARRIER HONEYCOMB FACE STATIC CRUSH

Test Vehicle: 2009 Acura TL  
NHTSA No.: C95309
Test Program: FMVSS 214 Indicant Side Impact
Test Date: March 12, 2009

NOTE: All dimensions are in millimeters with a tolerance of ±3 mm

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>HEIGHT AT CL (mm)*</th>
<th>DISTANCE RIGHT OF CENTER (mm)</th>
<th>DISTANCE LEFT OF CENTER (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEVEL 4</td>
<td>811</td>
<td>-800</td>
<td>411</td>
</tr>
<tr>
<td>TOP</td>
<td></td>
<td>-700</td>
<td>325</td>
</tr>
<tr>
<td>STACK</td>
<td></td>
<td>-600</td>
<td>84</td>
</tr>
<tr>
<td>LEVEL 3</td>
<td>682</td>
<td>-500</td>
<td>411</td>
</tr>
<tr>
<td>MID</td>
<td></td>
<td>-400</td>
<td>324</td>
</tr>
<tr>
<td>LEVEL 2</td>
<td>542</td>
<td>-300</td>
<td>87</td>
</tr>
<tr>
<td>TOP</td>
<td></td>
<td>-200</td>
<td>324</td>
</tr>
<tr>
<td>BUMPER</td>
<td></td>
<td>-100</td>
<td>412</td>
</tr>
<tr>
<td>CRUSH</td>
<td></td>
<td>0</td>
<td>412</td>
</tr>
<tr>
<td>LEVEL 1</td>
<td>430</td>
<td>100</td>
<td>501</td>
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<td>MID</td>
<td></td>
<td>200</td>
<td>317</td>
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<td>BUMPER</td>
<td></td>
<td>300</td>
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<tr>
<td>CRUSH</td>
<td></td>
<td>400</td>
<td>317</td>
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<td>500</td>
<td></td>
<td>500</td>
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<td>600</td>
<td></td>
<td>600</td>
<td>317</td>
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<td>700</td>
<td></td>
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<tr>
<td>800</td>
<td></td>
<td>800</td>
<td>317</td>
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</table>

*Heights measured above ground level.
### DATA SHEET NO. 13

**VEHICLE ACCELEROMETER LOCATIONS**

**Test Vehicle:** 2009 Acura TL  
**NHTSA No.:** C95309

**Test Program:** FMVSS 214 Indicant Side Impact  
**Test Date:** March 12, 2009

<table>
<thead>
<tr>
<th>Loc. No.</th>
<th>Accelerometer Location</th>
<th>Measurements (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>1</td>
<td>Right Sill at Front Seat</td>
<td>3045</td>
</tr>
<tr>
<td>2</td>
<td>Right Sill at Rear Seat</td>
<td>2152</td>
</tr>
<tr>
<td>3</td>
<td>Rear Floorpan Above Axle</td>
<td>1349</td>
</tr>
<tr>
<td>4</td>
<td>Left Sill at Rear Door</td>
<td>2217</td>
</tr>
<tr>
<td>5</td>
<td>Left Sill at Front Door</td>
<td>3182</td>
</tr>
<tr>
<td>6</td>
<td>Left Front Door C/L**</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>Rear Occupant Compartment</td>
<td>2235</td>
</tr>
<tr>
<td>8</td>
<td>Left Front Door Mid-Rear**</td>
<td>-</td>
</tr>
<tr>
<td>9</td>
<td>Left Front Door Upper C/L**</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Left Rear Door Mid-Rear**</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Left Rear Door Upper C/L**</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Left Lower B-Post</td>
<td>2366</td>
</tr>
<tr>
<td>13</td>
<td>Left Middle B-Post</td>
<td>2265</td>
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<tr>
<td>14</td>
<td>Left Lower A-Post</td>
<td>3454</td>
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<tr>
<td>15</td>
<td>Left Middle A-Post</td>
<td>3288</td>
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<td>16</td>
<td>Front Seat Track</td>
<td>2393</td>
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<td>17</td>
<td>Rear Seat Track or Structure</td>
<td>1137</td>
</tr>
<tr>
<td>18</td>
<td>Vehicle CG</td>
<td>2625</td>
</tr>
</tbody>
</table>

**Reference Points**  
- X - Test Vehicle Rear Bumper (+ forward)  
- Y - Test Vehicle Centerline (+ to right)  
- Z - Ground Plane (+ down)

**** Accelerometer was not requested by the COTR.
DATA SHEET NO. 14
MDB ACCELEROMETER LOCATIONS

Test Vehicle: 2009 Acura TL  
NHTSA No. C95309
Test Program: FMVSS 214 Indicant Side Impact  
Test Date: March 12, 2009

<table>
<thead>
<tr>
<th>Loc. No.</th>
<th>Accelerometer Location</th>
<th>Measurements (mm)</th>
</tr>
</thead>
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<tr>
<td>1</td>
<td>MDB CG</td>
<td>1859 0 -330</td>
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<tr>
<td>2</td>
<td>MDB Rear</td>
<td>386  -660 -660</td>
</tr>
</tbody>
</table>

Reference Points
X - MDB Rear Bumper (+ forward)
Y - MDB Centerline (+ to right)
Z - Ground Plane (+ down)
DATA SHEET NO. 15

VEHICLE STRUCTURAL MEASUREMENTS

Test Vehicle: 2009 Acura TL  
Test Program: FMVSS 214 Indicant Side Impact  
NHTSA No. C95309  
Test Date: March 12, 2009

<table>
<thead>
<tr>
<th>Elements</th>
<th>Pre-Test (mm)</th>
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<tbody>
<tr>
<td>1 Total Length</td>
<td>4969</td>
</tr>
<tr>
<td>2 Total Width</td>
<td>1859</td>
</tr>
<tr>
<td>3 Bumper Top Height</td>
<td>503</td>
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<tr>
<td>4 Bumper Bottom Height</td>
<td>325</td>
</tr>
<tr>
<td>5 Longitudinal Member Top Height</td>
<td>530</td>
</tr>
<tr>
<td>6 Distance between Longitudinal Members</td>
<td>1142</td>
</tr>
<tr>
<td>7 Longitudinal Member Width</td>
<td>100</td>
</tr>
<tr>
<td>8 Engine Top Height</td>
<td>843</td>
</tr>
<tr>
<td>9 Engine Bottom Height</td>
<td>169</td>
</tr>
<tr>
<td>10 Engine and gearbox width</td>
<td>539</td>
</tr>
<tr>
<td>11 Front bumper-engine distance</td>
<td>528</td>
</tr>
<tr>
<td>12 Front shock absorber fixing height</td>
<td>830</td>
</tr>
<tr>
<td>13 Bonnet leading edge height</td>
<td>788</td>
</tr>
<tr>
<td>14 Front shock absorber fixing width</td>
<td>974</td>
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<tr>
<td>15 Front bumper – front axle distance</td>
<td>1049</td>
</tr>
<tr>
<td>16 Front axle – a pillar distance</td>
<td>472</td>
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<tr>
<td>17 A-pillar – B-pillar distance</td>
<td>1174</td>
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<tr>
<td>18 B-Pillar – rear axle distance</td>
<td>1129</td>
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<tr>
<td>19 B-pillar – C-pillar distance</td>
<td>970</td>
</tr>
<tr>
<td>20 Roof sill bottom height</td>
<td>1324</td>
</tr>
<tr>
<td>21 Roof sill top height</td>
<td>1423</td>
</tr>
<tr>
<td>22 Floor sill bottom height</td>
<td>252</td>
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<tr>
<td>23 Floor sill top height</td>
<td>361</td>
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</table>
### DATA SHEET NO. 16
### HIGH SPEED CAMERA LOCATIONS AND DATA

**Test Vehicle:** 2009 Acura TL  
**Test Program:** FMVSS 214 Indicant Side Impact  
**NHTSA No.:** C95309  
**Test Date:** March 12, 2009

<table>
<thead>
<tr>
<th>No.</th>
<th>Camera View</th>
<th>Location (mm)</th>
<th>Angle (deg)</th>
<th>Lens (mm)</th>
<th>Film Speed (fps)</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Overhead Close-up</td>
<td>72 812 -4880</td>
<td>-90</td>
<td>8</td>
<td>1000</td>
</tr>
<tr>
<td>2</td>
<td>Overhead Overall</td>
<td>195 855 -4880</td>
<td>-90</td>
<td>28</td>
<td>1000</td>
</tr>
<tr>
<td>3</td>
<td>MDB Onboard, Impact Point Close-up</td>
<td>-1470 0 -847</td>
<td>0</td>
<td>13</td>
<td>500</td>
</tr>
<tr>
<td>4</td>
<td>MDB Onboard, Centerline of Impact</td>
<td>-1140 838 -1587</td>
<td>-17</td>
<td>7.5</td>
<td>500</td>
</tr>
<tr>
<td>5</td>
<td>Right Side, Ground Level, Overall</td>
<td>260 10400 975</td>
<td>-3</td>
<td>50</td>
<td>1000</td>
</tr>
<tr>
<td>6</td>
<td>Left Side, Ground Level, Overall</td>
<td>-2130 -1710 938</td>
<td>-6</td>
<td>28</td>
<td>1000</td>
</tr>
<tr>
<td>7</td>
<td>Vehicle Onboard Front SID/HIII, Front</td>
<td>-520 460 1270</td>
<td>-6</td>
<td>25</td>
<td>500</td>
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<tr>
<td>8</td>
<td>Vehicle Onboard Front SID/HIII, Side</td>
<td>1750 775 1045</td>
<td>-3</td>
<td>12.5</td>
<td>500</td>
</tr>
<tr>
<td>9</td>
<td>Vehicle Onboard Rear SID/HIII, Side</td>
<td>1740 1675 1065</td>
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<td>12.5</td>
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<td>10</td>
<td>Real Time Coverage</td>
<td></td>
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**Reference Points**  
X - Impact Line  
Y - MDB Left Edge Impact Point  
Z - Ground Plane
## DATA SHEET NO. 17
### SUMMARY OF FMVSS 301 DATA

**Test Vehicle:** 2009 Acura TL  
**NHTSA No.:** C95309  
**Test Program:** FMVSS 214 Indicant Side Impact  
**Test Date:** March 12, 2009

### FUEL SYSTEM INTEGRITY POST IMPACT DATA

<table>
<thead>
<tr>
<th>Time Interval</th>
<th>FMVSS 301 Maximum Allowable Spillage</th>
<th>Spillage (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact Until Motion Ceases</td>
<td>28 g</td>
<td>0</td>
</tr>
<tr>
<td>First Five Minutes Following Impact</td>
<td>142 g</td>
<td>0</td>
</tr>
<tr>
<td>Next 25 Minutes</td>
<td>28 g / 1 minute</td>
<td>0</td>
</tr>
</tbody>
</table>

**Spillage Location(s):** None

### STATIC ROLLOVER DATA

<table>
<thead>
<tr>
<th>Rollover Stage</th>
<th>Rotation Time (spec. 1 - 3 min)</th>
<th>FMVSS 301 Hold Time</th>
<th>Total Time</th>
<th>Next Whole Minute Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>0° - 90°</td>
<td>1 minute 08 seconds</td>
<td>5 minutes</td>
<td>6 minutes 8 seconds</td>
<td>7 minutes</td>
</tr>
<tr>
<td>90° - 180°</td>
<td>1 minute 03 seconds</td>
<td>5 minutes</td>
<td>6 minutes 3 seconds</td>
<td>7 minutes</td>
</tr>
<tr>
<td>180° - 270°</td>
<td>0 minutes 59 seconds</td>
<td>5 minutes</td>
<td>5 minutes 59 seconds</td>
<td>6 minutes</td>
</tr>
<tr>
<td>270° - 360°</td>
<td>1 minute 12 seconds</td>
<td>5 minutes</td>
<td>6 minutes 12 seconds</td>
<td>7 minutes</td>
</tr>
</tbody>
</table>

### Spillage Location(s)

<table>
<thead>
<tr>
<th>Rollover Stage</th>
<th>Spillage (g)</th>
<th>6th min.</th>
<th>7th min.</th>
<th>8th min. (if required)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0° - 90°</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>90° - 180°</td>
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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>180° - 270°</td>
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<td>0</td>
<td>0</td>
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<tr>
<td>270° - 360°</td>
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**FMVSS 301 Maximum Allowable (for each 90° stage):**

<table>
<thead>
<tr>
<th>Rollover Stage</th>
<th>Spillage Location(s)</th>
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<tbody>
<tr>
<td>0° - 90°</td>
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</tr>
<tr>
<td>90° - 180°</td>
<td>None</td>
</tr>
<tr>
<td>180° - 270°</td>
<td>None</td>
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<tr>
<td>270° - 360°</td>
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</tbody>
</table>

**Spillage Location(s):** None
APPENDIX A

PHOTOGRAPHS
## TABLE OF PHOTOGRAPHS

<table>
<thead>
<tr>
<th>FIGURE</th>
<th>TITLE</th>
<th>PAGE</th>
</tr>
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<tbody>
<tr>
<td>A-1</td>
<td>As Received Left Front ¾ View</td>
<td>A-4</td>
</tr>
<tr>
<td>A-2</td>
<td>As Received Right Rear ¾ View</td>
<td>A-4</td>
</tr>
<tr>
<td>A-3</td>
<td>Vehicle Certification Label</td>
<td>A-5</td>
</tr>
<tr>
<td>A-4</td>
<td>Vehicle Tire Placard Label</td>
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<tr>
<td>A-5</td>
<td>Pre-Test Front View</td>
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<td>Post-Test Front View</td>
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<td>A-7</td>
<td>Pre-Test Left Front ¾ View</td>
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<td>A-8</td>
<td>Post-Test Left Front ¾ View</td>
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<td>A-9</td>
<td>Pre-Test Left Side View</td>
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<td>A-10</td>
<td>Post-Test Left Side View</td>
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<tr>
<td>A-11</td>
<td>Pre-Test Left Rear ¾ View</td>
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<tr>
<td>A-12</td>
<td>Post-Test Left Rear ¾ View</td>
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</tr>
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<td>A-13</td>
<td>Pre-Test Rear View</td>
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<td>A-14</td>
<td>Post-Test Rear View</td>
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<tr>
<td>A-15</td>
<td>Pre-Test Right Rear ¾ View</td>
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<td>A-16</td>
<td>Post-Test Right Rear ¾ View</td>
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<td>Pre-Test Right Side View</td>
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<td>A-18</td>
<td>Post-Test Right Side View</td>
<td>A-12</td>
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<tr>
<td>A-19</td>
<td>Pre-Test Right Front ¾ View</td>
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<td>A-20</td>
<td>Post-Test Right Front ¾ View</td>
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</tr>
<tr>
<td>A-21</td>
<td>Pre-Test Frontal View of MDB Impactor Face</td>
<td>A-14</td>
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<tr>
<td>A-22</td>
<td>Post-Test Frontal View of MDB Impactor Face</td>
<td>A-14</td>
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<td>A-23</td>
<td>Pre-Test Left Side View of MDB Impactor Face</td>
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<td>Post-Test Left Side View of MDB Impactor Face</td>
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<td>Pre-Test Right Side View of MDB Impactor Face</td>
<td>A-16</td>
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<td>Post-Test Right Side View of MDB Impactor Face</td>
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<td>A-27</td>
<td>Pre-Test Top View of MDB Impactor Face</td>
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<td>Post-Test Top View of MDB Impactor Face</td>
<td>A-17</td>
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<tr>
<td>A-29</td>
<td>Pre-Test Left Side View of Aligned MDB and Vehicle</td>
<td>A-18</td>
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<tr>
<td>A-30</td>
<td>Pre-Test Right Side View of Aligned MDB and Vehicle</td>
<td>A-18</td>
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<tr>
<td>A-31</td>
<td>Pre-Test Overhead View of Aligned MDB and Vehicle</td>
<td>A-19</td>
</tr>
<tr>
<td>A-32</td>
<td>Post-Test Overhead View of MDB and Vehicle</td>
<td>A-19</td>
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<tr>
<td>A-33</td>
<td>Pre-Test Close-Up View of Impact Point Target</td>
<td>A-20</td>
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<td>A-34</td>
<td>Post-Test Close-Up View of Impact Point Target</td>
<td>A-20</td>
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### TABLE OF PHOTOGRAPHS (continued)

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<th>FIGURE</th>
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<th>PAGE</th>
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<tr>
<td>A-35</td>
<td>Pre-Test Right Occupant Compartment View of Driver</td>
<td>A-21</td>
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<td>A-36</td>
<td>Post-Test Right Occupant Compartment View of Driver</td>
<td>A-21</td>
</tr>
<tr>
<td>A-37</td>
<td>Pre-Test Right Occupant Compartment View of Passenger</td>
<td>A-22</td>
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<td>A-38</td>
<td>Post-Test Right Occupant Compartment View of Passenger</td>
<td>A-22</td>
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<td>Pre-Test Left Occupant Compartment View of Driver</td>
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<tr>
<td>A-40</td>
<td>Post-Test Left Occupant Compartment View of Driver</td>
<td>A-23</td>
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<tr>
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<td>Pre-Test Left Occupant Compartment View of Passenger</td>
<td>A-24</td>
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<td>A-42</td>
<td>Post-Test Left Occupant Compartment View of Passenger</td>
<td>A-24</td>
</tr>
<tr>
<td>A-43</td>
<td>Pre-Test Left Front Interior Trim</td>
<td>A-25</td>
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<tr>
<td>A-44</td>
<td>Post-Test Left Front Interior Trim</td>
<td>A-25</td>
</tr>
<tr>
<td>A-45</td>
<td>Pre-Test Left Rear Interior Trim</td>
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</tr>
<tr>
<td>A-46</td>
<td>Post-Test Left Rear Interior Trim</td>
<td>A-26</td>
</tr>
<tr>
<td>A-47</td>
<td>Pre-Test Left Front ¾ View of Left Side Doors</td>
<td>A-27</td>
</tr>
<tr>
<td>A-48</td>
<td>Post-Test Left Front ¾ View of Left Side Doors</td>
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<tr>
<td>A-49</td>
<td>Pre-Test Left Rear ¾ View of Left Side Doors</td>
<td>A-28</td>
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<td>Post-Test Left Rear ¾ View of Left Side Doors</td>
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</tr>
<tr>
<td>A-51</td>
<td>Rollover 90 Degrees</td>
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<td>A-52</td>
<td>Rollover 180 Degrees</td>
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<td>A-53</td>
<td>Rollover 270 Degrees</td>
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<td>A-54</td>
<td>Rollover 360 Degrees</td>
<td>A-30</td>
</tr>
<tr>
<td>A-55</td>
<td>Impact Photo</td>
<td>A-31</td>
</tr>
</tbody>
</table>
Figure A-1: As Received Left Front ¾ View

Figure A-2: As Received Right Rear ¾ View
Figure A-3: Vehicle Certification Label

Figure A-4: Vehicle Tire Placard Label
Figure A-5: Pre-Test Front View

Figure A-6: Post-Test Front View
Figure A-7: Pre-Test Left Front ¾ View

Figure A-8: Post-Test Left Front ¾ View
Figure A-9: Pre-Test Left Side View

Figure A-10: Post-Test Left Side View
Figure A-13: Pre-Test Rear View

Figure A-14: Post-Test Rear View
Figure A-15: Pre-Test Right Rear ¾ View

Figure A-16: Post-Test Right Rear ¾ View
Figure A-17: Pre-Test Right Side View

Figure A-18: Post-Test Right Side View
Figure A-19: Pre-Test Right Front ¾ View

Figure A-20: Post-Test Right Front ¾ View
Figure A-21: Pre-Test Frontal View of MDB Impactor Face

Figure A-22: Post-Test Frontal View of MDB Impactor Face
Figure A-23: Pre-Test Left Side View of MDB Impactor Face

Figure A-24: Post-Test Left Side View of MDB Impactor Face
Figure A-25: Pre-Test Right Side View of MDB Impactor Face

Figure A-26: Post-Test Right Side View of MDB Impactor Face
Figure A-29: Pre-Test Left Side View of Aligned MDB and Vehicle

Figure A-30: Pre-Test Right Side View of Aligned MDB and Vehicle
Figure A-31: Pre-Test Overhead View of Aligned MDB and Vehicle

Figure A-32: Post-Test Overhead View of MDB and Vehicle
Figure A-33: Pre-Test Close-Up View of Impact Point Target

Figure A-34: Post-Test Close-Up View of Impact Point Target
Figure A-37: Pre-Test Right Occupant Compartment View of Passenger

Figure A-38: Post-Test Right Occupant Compartment View of Passenger
Figure A-39: Pre-Test Left Occupant Compartment View of Driver

Not Available

Figure A-40: Post-Test Left Occupant Compartment View of Driver
Figure A-41: Pre-Test Left Occupant Compartment View of Passenger

Figure A-42: Post-Test Left Occupant Compartment View of Passenger

Not Available
Figure A-45: Pre-Test Left Rear Interior Trim

Figure A-46: Post-Test Left Rear Interior Trim
Figure A-47: Pre-Test Left Front ¾ View of Left Side Doors

Figure A-48: Post-Test Left Front ¾ View of Left Side Doors
Figure A-49: Pre-Test Left Rear ¾ View of Left Side Doors

Figure A-50: Post-Test Left Rear ¾ View of Left Side Doors
Figure A-51: Rollover 90 Degrees

Figure A-52: Rollover 180 Degrees
Figure A-53: Rollover 270 Degrees

Figure A-54: Rollover 360 Degrees
Figure A-55: Impact Photo
APPENDIX B

SID/HIII, VEHICLE AND MDB RESPONSE DATA

(SAE sign convention)
# DATA CHANNEL FILTER CLASS SUMMARY

<table>
<thead>
<tr>
<th>Data Type</th>
<th>SAE Filter Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dummy Head Accelerations</td>
<td>CFC 1000</td>
</tr>
<tr>
<td>Rib Accelerations</td>
<td>FIR 100</td>
</tr>
<tr>
<td>Spine Accelerations</td>
<td>FIR 100</td>
</tr>
<tr>
<td>Pelvis Accelerations</td>
<td>FIR 100</td>
</tr>
</tbody>
</table>

## DATA CHANNEL TITLE KEY

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Suffix</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1 = Vehicle 1 (Moving Barrier)</td>
<td>Ax = Acceleration, X-direction</td>
</tr>
<tr>
<td>V2 = Vehicle 2 (Test Vehicle)</td>
<td>Ay = Acceleration, Y-direction</td>
</tr>
<tr>
<td>P1 = Left Front Seating Position (Driver)</td>
<td>Az = Acceleration, Z-direction</td>
</tr>
<tr>
<td>P4 = Left Second Row Seating Position</td>
<td>Fx = Force, X-direction</td>
</tr>
<tr>
<td>(Passenger)</td>
<td></td>
</tr>
<tr>
<td>A1-A18 = Accelerometer Location Number</td>
<td>Fy = Force, Y-direction</td>
</tr>
<tr>
<td></td>
<td>Fz = Force, Z-direction</td>
</tr>
<tr>
<td></td>
<td>Mx = Moment about X</td>
</tr>
<tr>
<td></td>
<td>My = Moment about Y</td>
</tr>
<tr>
<td></td>
<td>Mz = Moment about Z</td>
</tr>
</tbody>
</table>
## TABLE OF DATA PLOTS

<table>
<thead>
<tr>
<th>PLOT</th>
<th>PLOT NAME [UNITS, CHANNEL FILTER CLASS]</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>V2P1 Head Ax [g, CFC_1000]</td>
<td>B-5</td>
</tr>
<tr>
<td>2</td>
<td>V2P1 Head Ay [g, CFC_1000]</td>
<td>B-5</td>
</tr>
<tr>
<td>3</td>
<td>V2P1 Head Az [g, CFC_1000]</td>
<td>B-5</td>
</tr>
<tr>
<td>4</td>
<td>V2P1 Head Ar [g, CFC_1000]</td>
<td>B-5</td>
</tr>
<tr>
<td>5</td>
<td>V1P1 Upper Rib Ay [g, FIR_100]</td>
<td>B-6</td>
</tr>
<tr>
<td>6</td>
<td>V1P1 Lower Rib Ay [g, FIR_100]</td>
<td>B-6</td>
</tr>
<tr>
<td>7</td>
<td>V1P1 Lower Spine Ay [g, FIR_100]</td>
<td>B-6</td>
</tr>
<tr>
<td>8</td>
<td>V1P1 Pelvic Ay [g, FIR_100]</td>
<td>B-6</td>
</tr>
<tr>
<td>9</td>
<td>V2P4 Head Ax [g, CFC_1000]</td>
<td>B-7</td>
</tr>
<tr>
<td>10</td>
<td>V2P4 Head Ay [g, CFC_1000]</td>
<td>B-7</td>
</tr>
<tr>
<td>11</td>
<td>V2P4 Head Az [g, CFC_1000]</td>
<td>B-7</td>
</tr>
<tr>
<td>12</td>
<td>V2P4 Head Ar [g, CFC_1000]</td>
<td>B-7</td>
</tr>
<tr>
<td>13</td>
<td>V1P4 Upper Rib Ay [g, FIR_100]</td>
<td>B-8</td>
</tr>
<tr>
<td>14</td>
<td>V1P4 Lower Rib Ay [g, FIR_100]</td>
<td>B-8</td>
</tr>
<tr>
<td>15</td>
<td>V1P4 Lower Spine Ay [g, FIR_100]</td>
<td>B-8</td>
</tr>
<tr>
<td>16</td>
<td>V1P4 Pelvic Ay [g, FIR_100]</td>
<td>B-8</td>
</tr>
</tbody>
</table>
The following dummy, vehicle and load cell response data can be found in the research and development section of the NHTSA website at: www.nhtsa.dot.gov

V2P1 Head Ax  V2P4 Lower Rib Redundant Ay
V2P1 Head Ay  V2P4 Lower Spine Ay
V2P1 Head Az  V2P4 Lower Spine Redundant Ay
V2P1 Head Ax Redundant  V2P4 Pelvic Ay
V2P1 Head Ay Redundant  V2P4 Pelvic Redundant Ay
V2P1 Head Az Redundant
V2P1 Upper Neck Fx  V2A1 Right Front Sill Ax
V2P1 Upper Neck Fy  V2A1 Right Front Sill Ay
V2P1 Upper Neck Fz  V2A1 Right Front Sill Az
V2P1 Upper Neck Mx  V2A2 Right Rear Sill Ax
V2P1 Upper Neck My  V2A2 Right Rear Sill Ay
V2P1 Upper Neck Mz  V2A2 Right Rear Sill Az
V2P1 Upper Rib Ay  V2A3 Rear Floorpan Ax
V2P1 Upper Rib Redundant Ay  V2A3 Rear Floorpan Ay
V2P1 Lower Rib Ay  V2A3 Rear Floorplan Az
V2P1 Lower Rib Redundant Ay  V2A4 Left Rear Sill Ay
V2P1 Lower Spine Ay  V2A5 Left Front Sill Ay
V2P1 Lower Spine Redundant Ay  V2A7 Right Rear Compartment Ay
V2P1 Pelvic Ay  V2A12 Left Lower B Post Ay
V2P1 Pelvic Redundant Ay  V2A13 Left Mid B Post Ay
V2P4 Head Ax  V2A14 Left Lower A Post Ay
V2P4 Head Ay  V2A15 Left Mid A Post Ay
V2P4 Head Az  V2A16 Front Seat Track Ay
V2P4 Head Ax Redundant  V2A17 Rear Seat Track Ay
V2P4 Head Ay Redundant  V2A18 Target CG Ax
V2P4 Head Az Redundant  V2A18 Target CG Ay
V2P4 Upper Neck Fx  V2A18 Target CG Az
V2P4 Upper Neck Fy  V1 Moving Barrier CG Ax
V2P4 Upper Neck Fz  V1 Moving Barrier CG Ay
V2P4 Upper Neck Mx  V1 Moving Barrier CG Az
V2P4 Upper Neck My  V1 Moving Barrier Left Rail Ax
V2P4 Upper Neck Mz  V1 Moving Barrier Left Rail Ay
V2P4 Upper Rib Ay
V2P4 Upper Rib Redundant Ay
V2P4 Lower Rib Ay

TEST NOTES

The following channel anomalies occurred: None
V2P1 Head x

Max: 6.8 [g] at 0.015 [s]
Min: -25.7 [g] at 0.050 [s]

V2P1 Head y

Max: 41.2 [g] at 0.048 [s]
Min: -6.7 [g] at 0.122 [s]

V2P1 Head z

Max: 20.4 [g] at 0.030 [s]
Min: -9.1 [g] at 0.059 [s]

V2P1 Head Resultant

Max: 48.1 [g] at 0.048 [s]
Min: 0.0 [g] at 0.000 [s]
2009 FMVSS 214I  2009 Acura TL
C95309 - March 12, 2009

V2P1 Upper Rib y
FIR_100
Max: 47.0 [g] at 0.037 [s]
Min: -10.3 [g] at 0.119 [s]

V2P1 Lower Rib y
FIR_100
Max: 50.2 [g] at 0.037 [s]
Min: -11.2 [g] at 0.119 [s]

V2P1 Lower Spine y
FIR_100
Max: 61.2 [g] at 0.030 [s]
Min: -10.8 [g] at 0.069 [s]

V2P1 Pelvic y
FIR_100
Max: 67.4 [g] at 0.027 [s]
Min: -18.3 [g] at 0.046 [s]
V2P4 Head x
CFC_1000
Max: 3.1 [g] at 0.183 [s]
Min: -11.4 [g] at 0.062 [s]

V2P4 Head y
CFC_1000
Max: 92.3 [g] at 0.058 [s]
Min: -7.5 [g] at 0.102 [s]

V2P4 Head z
CFC_1000
Max: 17.7 [g] at 0.099 [s]
Min: -39.5 [g] at 0.063 [s]

V2P4 Head Resultant
CFC_1000
Max: 96.0 [g] at 0.058 [s]
Min: 0.0 [g] at -0.003 [s]
2009 FMVSS 214 I  2009 Acura TL
C95309 - March 12, 2009

V2P4 Upper Rib y
Max: 44.5 [g] at 0.049 [s]
Min: -10.9 [g] at 0.101 [s]

V2P4 Lower Rib y
Max: 47.9 [g] at 0.045 [s]
Min: -9.9 [g] at 0.071 [s]

V2P4 Lower Spine y
Max: 50.9 [g] at 0.047 [s]
Min: -7.7 [g] at 0.076 [s]

V2P4 Pelvic y
Max: 56.3 [g] at 0.037 [s]
Min: -3.9 [g] at 0.101 [s]
APPENDIX C

DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA
# SUMMARY
## SID H3 PRE & POST TEST CALIBRATION

**CONFIGURED FOR** LEFT SIDE IMPACT

<table>
<thead>
<tr>
<th>Test Parameter</th>
<th>Specification</th>
<th>SID H3 No.: 270</th>
<th></th>
<th>SID H3 No.: 269</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SH - Seated Height (mm)</td>
<td>889 - 909</td>
<td>899</td>
<td>899</td>
<td>899</td>
<td>899</td>
</tr>
<tr>
<td>RH - Rib Height (mm)</td>
<td>501 - 521</td>
<td>505</td>
<td>505</td>
<td>505</td>
<td>505</td>
</tr>
<tr>
<td>HP - Hip Pivot Height (mm)</td>
<td>99 ref.</td>
<td>99</td>
<td>99</td>
<td>99</td>
<td>99</td>
</tr>
<tr>
<td>RD - Rib from Back Line (mm)</td>
<td>229 - 241</td>
<td>234</td>
<td>234</td>
<td>234</td>
<td>234</td>
</tr>
<tr>
<td>KV - Knee Pivot from Back Line (mm)</td>
<td>511 - 526</td>
<td>518</td>
<td>518</td>
<td>516</td>
<td>516</td>
</tr>
<tr>
<td>SW - Knee Pivot to Floor (mm)</td>
<td>490 - 505</td>
<td>495</td>
<td>495</td>
<td>495</td>
<td>495</td>
</tr>
<tr>
<td>HW - Hip Width (mm)</td>
<td>356 - 391</td>
<td>384</td>
<td>384</td>
<td>381</td>
<td>381</td>
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</tbody>
</table>

## THORAX IMPACTS

<table>
<thead>
<tr>
<th>Test Parameter</th>
<th>Specification</th>
<th>SID H3 No.: 270</th>
<th></th>
<th>SID H3 No.: 269</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TEMPERATURE (° C)</td>
<td>18.9 - 25.5</td>
<td>21.7</td>
<td>22.2</td>
<td>21.7</td>
<td>21.7</td>
</tr>
<tr>
<td>RELATIVE HUMIDITY (%)</td>
<td>10 - 70</td>
<td>21</td>
<td>28</td>
<td>21</td>
<td>22</td>
</tr>
<tr>
<td>PROBE SPEED (m/s)</td>
<td>4.27 - 4.33</td>
<td>4.31</td>
<td>4.31</td>
<td>4.30</td>
<td>4.31</td>
</tr>
<tr>
<td>UPPER RIB (g's)</td>
<td>37 - 46</td>
<td>37.94</td>
<td>41.27</td>
<td>40.99</td>
<td>39.26</td>
</tr>
<tr>
<td>LOWER RIB (g's)</td>
<td>37 - 46</td>
<td>38.23</td>
<td>41.60</td>
<td>39.62</td>
<td>39.33</td>
</tr>
<tr>
<td>LOWER SPINE (g's)</td>
<td>15 - 22</td>
<td>19.05</td>
<td>21.78</td>
<td>18.69</td>
<td>17.48</td>
</tr>
</tbody>
</table>

## PELVIS IMPACT

<table>
<thead>
<tr>
<th>Test Parameter</th>
<th>Specification</th>
<th>SID H3 No.: 270</th>
<th></th>
<th>SID H3 No.: 269</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TEMPERATURE (° C)</td>
<td>18.9 - 25.5</td>
<td>21.7</td>
<td>22.2</td>
<td>21.7</td>
<td>21.7</td>
</tr>
<tr>
<td>RELATIVE HUMIDITY (%)</td>
<td>10 - 70</td>
<td>21</td>
<td>28.0</td>
<td>23</td>
<td>21</td>
</tr>
<tr>
<td>PROBE SPEED (m/s)</td>
<td>4.27 - 4.33</td>
<td>4.32</td>
<td>4.31</td>
<td>4.30</td>
<td>4.31</td>
</tr>
<tr>
<td>PELVIS (g's)</td>
<td>40 - 60</td>
<td>48.54</td>
<td>49.39</td>
<td>47.21</td>
<td>54.58</td>
</tr>
</tbody>
</table>

**REMARKS:** None
CALIBRATION TEST RESULTS
PRE-TEST

SID H3 NO.:  270

CONFIGURED FOR  LEFT  SIDE IMPACT
CALIBRATION TEST RESULTS SUMMARY
PRE-TEST

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 270  Sequential Test Number: 1
Date: 12/1/08  Laboratory Technician: A. Rudniski

<table>
<thead>
<tr>
<th>TEST</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXTERNAL DIMENSIONS</td>
<td>Passed all requirements.</td>
</tr>
<tr>
<td>THORACIC SHOCK ABSORBER TEST</td>
<td>Passed all requirements.</td>
</tr>
<tr>
<td>LATERAL THORAX IMPACT TEST</td>
<td>Passed all requirements.</td>
</tr>
<tr>
<td>LATERAL PELVIS IMPACT TEST</td>
<td>Passed all requirements.</td>
</tr>
<tr>
<td>HEAD DROP TEST*</td>
<td>Passed all requirements.</td>
</tr>
<tr>
<td>LATERAL NECK BEND TEST*</td>
<td>Passed all requirements.</td>
</tr>
<tr>
<td>ABDOMINAL COMPRESSION TEST*</td>
<td>Passed all requirements.</td>
</tr>
<tr>
<td>LUMBAR FLEXION TEST*</td>
<td>Passed all requirements.</td>
</tr>
</tbody>
</table>

* Test not required for SID certification.

REMARKS: None
## EXTERNAL DIMENSIONS
### PRE-TEST

**CONFIGURED FOR LEFT SIDE IMPACT**

<table>
<thead>
<tr>
<th>SID H3 Serial No.: 270</th>
<th>Sequential Test Number: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date: 12/1/08</td>
<td>Laboratory Technician: A. Rudniski</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TEST PARAMETER</th>
<th>SPECIFICATION</th>
<th>TEST RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SH- Seated Height (mm)</td>
<td>889 – 909</td>
<td>899</td>
</tr>
<tr>
<td>RH- Rib Height (mm)</td>
<td>502 – 520</td>
<td>505</td>
</tr>
<tr>
<td>HP- Hip Pivot Height (mm)</td>
<td>99 ref.</td>
<td>99</td>
</tr>
<tr>
<td>RD- Rib from Back Line (mm)</td>
<td>229 – 241</td>
<td>234</td>
</tr>
<tr>
<td>KH- Knee Pivot from Back Line (mm)</td>
<td>511 – 526</td>
<td>518</td>
</tr>
<tr>
<td>KV- Knee Pivot to Floor (mm)</td>
<td>490 – 505</td>
<td>495</td>
</tr>
<tr>
<td>HW- Hip Width (mm)</td>
<td>356 - 391</td>
<td>384</td>
</tr>
</tbody>
</table>

**REMARKS:** None
**Shock Test Low (3.05 m/s)**

**PRE TEST**

**CONFIGURED FOR LEFT SIDE IMPACT**

ATD Serial No: 270  
Date: 07-25-08  
Sequential Test Number: 1  
File: 270 Shock10 07-25-08  
Laboratory Technician: A. Rudniski

<table>
<thead>
<tr>
<th>TEST PARAMETER</th>
<th>SPECIFICATION</th>
<th>TEST RESULTS</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Temperature:</td>
<td>18.9-25.5 C</td>
<td>21.7 C</td>
<td>Passed</td>
</tr>
<tr>
<td>Lab Humidity:</td>
<td>10-70 %</td>
<td>63.00 %</td>
<td>Passed</td>
</tr>
<tr>
<td>Displacement:</td>
<td>30.00-35.00 mm</td>
<td>32.78 mm</td>
<td>Passed</td>
</tr>
<tr>
<td>Maximum Force:</td>
<td>836.00-1125.00 N</td>
<td>1058.75 N</td>
<td>Passed</td>
</tr>
</tbody>
</table>

Impact Test Velocity: 3.05 m/s  
Damper Identification: 270  
Damper Setting: 5

Displacement vs. Time:
- Max: 32.8 [mm] at 0.031 [s]  
- Min: -0.6 [mm] at 0.104 [s]

Shock Force vs. Time:
- Max: 1058.7 [N] at 0.011 [s]  
- Min: -584.2 [N] at 0.104 [s]
Shock Test Medium (4.27 m/s)

PRE TEST

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270
Date: 07-25-08

Sequential Test Number: 1
File: 270 Shock14 07-25-08
Laboratory Technician: A. Rudniski

<table>
<thead>
<tr>
<th>TEST PARAMETER</th>
<th>SPECIFICATION</th>
<th>TEST RESULTS</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Temperature:</td>
<td>18.9-25.5 C</td>
<td>21.7 C</td>
<td>Passed</td>
</tr>
<tr>
<td>Lab Humidity:</td>
<td>10-70 %</td>
<td>63.00 %</td>
<td>Passed</td>
</tr>
<tr>
<td>Displacement:</td>
<td>32.00-37.00 mm</td>
<td>35.79 mm</td>
<td>Passed</td>
</tr>
<tr>
<td>Maximum Force:</td>
<td>1730.00-2099.00 N</td>
<td>1896.42 N</td>
<td>Passed</td>
</tr>
<tr>
<td>Impact Test Velocity:</td>
<td>4.27 m/s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Damper Identification:</td>
<td>270</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Damper Setting:</td>
<td>5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shock Force vs. Time
Max: 1896.4 [N] at 0.009 [s]
Min: -615.9 [N] at 0.092 [s]

Displacement vs. Time
Max: 35.8 [mm] at 0.030 [s]
Min: -0.6 [mm] at 0.092 [s]
Shock Test High (6.10 m/s)

PRE TEST

CONFIGURED FOR LEFT SIDE IMPACT

| Lab Temperature: | 18.9-25.5 C | 21.7 C | Passed |
| Lab Humidity: | 10-70 % | 63.00 % | Passed |
| Displacement: | 33.00-40.00 mm | 38.17 mm | Passed |
| Maximum Force: | 3741.00-4448.00 N | 3969.63 N | Passed |

Impact Test Velocity: 6.10 m/s
Damper Identification: 270
Damper Setting: 5

### Test Parameter vs. Test Results

![Displacement vs. Time](image)

- **Max**: 38.2 [mm] at 0.028 [s]
- **Min**: -0.3 [mm] at 0.081 [s]

![Shock Force vs. Time](image)

- **Max**: 3969.6 [N] at 0.007 [s]
- **Min**: -751.1 [N] at 0.079 [s]
CONFIGURED FOR LEFT SIDE IMPACT

Thorax Impact
Pre-Test

ATD Serial No: 270
Date: 11-26-08

Sequential Test Number: 1     File: 270T 11-26-08
Laboratory Technician: A. Rudniski

<table>
<thead>
<tr>
<th>TEST PARAMETER</th>
<th>SPECIFICATION</th>
<th>TEST RESULTS</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Temperature:</td>
<td>18.9-25.5 C</td>
<td>21.7 C</td>
<td>Passed</td>
</tr>
<tr>
<td>Lab Humidity:</td>
<td>10-70 %</td>
<td>21.00 %</td>
<td>Passed</td>
</tr>
<tr>
<td>Probe Velocity:</td>
<td>4.27 - 4.33 m/s</td>
<td>4.31 m/s</td>
<td>Passed</td>
</tr>
<tr>
<td>Upper Rib Acceleration:</td>
<td>37.00-46.00 G's</td>
<td>37.94 G's</td>
<td>Passed</td>
</tr>
<tr>
<td>Lower Rib Acceleration:</td>
<td>37.00-46.00 G's</td>
<td>38.23 G's</td>
<td>Passed</td>
</tr>
<tr>
<td>Lower Spine Acceleration:</td>
<td>15.00-22.00 G's</td>
<td>19.05 G's</td>
<td>Passed</td>
</tr>
</tbody>
</table>

C-9 8867-F214-03
Pelvis Impact test

Pre-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270
Date: 11-26-08

Sequential Test Number: 1    File: 270P 11-26-08
Laboratory Technician: A. Rudniski

<table>
<thead>
<tr>
<th>TEST PARAMETER</th>
<th>SPECIFICATION</th>
<th>TEST RESULTS</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Temperature:</td>
<td>18.9-25.5 C</td>
<td>21.7 C</td>
<td>Passed</td>
</tr>
<tr>
<td>Lab Humidity:</td>
<td>10-70 %</td>
<td>21.00 %</td>
<td>Passed</td>
</tr>
<tr>
<td>Probe Velocity:</td>
<td>4.27- 4.33 m/s</td>
<td>4.32 m/s</td>
<td>Passed</td>
</tr>
<tr>
<td>Pelvis Y Acceleration:</td>
<td>40.00-60.00 G's</td>
<td>48.54 G's</td>
<td>Passed</td>
</tr>
<tr>
<td>Time Above 20 Gs</td>
<td>3.0-7.0 ms</td>
<td>5.6 ms</td>
<td>Passed</td>
</tr>
</tbody>
</table>

PVCN1 Ay Max: 64.0 [G's] at 0.011 [s]
Min: -9.0 [G's] at 0.026 [s] CFC_100

PVCN2 Ay Max: 48.5 [G's] at 0.011 [s]
Min: -8.4 [G's] at 0.028 [s] FIR_100

C-10

8867-F214-03
Head Drop Test
Pre-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270
Date: 11-24-08
Sequential Test Number: 1    File: 270H 11-24-08
Laboratory Technician: A.Rudniski

<table>
<thead>
<tr>
<th>TEST PARAMETER</th>
<th>SPECIFICATION</th>
<th>TEST RESULTS</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Temperature:</td>
<td>18.9-25.6 C</td>
<td>21.7 C</td>
<td>Passed</td>
</tr>
<tr>
<td>Lab Humidity:</td>
<td>10-70 %</td>
<td>21.00 %</td>
<td>Passed</td>
</tr>
<tr>
<td>Peak Resultant Accel.:</td>
<td>120-150 Gs</td>
<td>137.37 Gs</td>
<td>Passed</td>
</tr>
<tr>
<td>Peak Lateral Accel.:</td>
<td>15 Gs Max</td>
<td>1.25 Gs</td>
<td>Passed</td>
</tr>
<tr>
<td>Curve PerCent NonModal:</td>
<td>&lt; 15%</td>
<td>7.32 %</td>
<td>Passed</td>
</tr>
</tbody>
</table>

![Graph of HDCG Ax](image1)

![Graph of HDCG Ay](image2)

![Graph of HDCG Az](image3)

![Graph of HDCG Ar](image4)
## Neck Test
### Pre-Test

**CONFIGURED FOR LEFT SIDE IMPACT**

<table>
<thead>
<tr>
<th>TEST PARAMETER</th>
<th>SPECIFICATION</th>
<th>TEST RESULTS</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Temperature:</td>
<td>20.6-22.2 C</td>
<td>21.7 C</td>
<td>Passed</td>
</tr>
<tr>
<td>Lab Humidity:</td>
<td>10-70 %</td>
<td>20.00 %</td>
<td>Passed</td>
</tr>
<tr>
<td>Impact Velocity:</td>
<td>6.89- 7.13 m/s</td>
<td>7.00 m/s</td>
<td>Passed</td>
</tr>
</tbody>
</table>

**PENDULUM DELTA V**

<table>
<thead>
<tr>
<th>Delta V parameter</th>
<th>Specification</th>
<th>Test Results</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delta V at 10 ms</td>
<td>1.96- 2.55 m/s</td>
<td>2.34 m/s</td>
<td>Passed</td>
</tr>
<tr>
<td>Delta V at 20 ms</td>
<td>4.12- 5.10 m/s</td>
<td>4.70 m/s</td>
<td>Passed</td>
</tr>
<tr>
<td>Delta V at 30 ms</td>
<td>5.73- 7.01 m/s</td>
<td>6.60 m/s</td>
<td>Passed</td>
</tr>
<tr>
<td>Delta V between 40-70 ms</td>
<td>6.27- 7.64 m/s</td>
<td>7.57 m/s</td>
<td>Passed</td>
</tr>
</tbody>
</table>

**D PLANE ROTATION**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
<th>Test Results</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Rotation</td>
<td>66.0-82.0 Deg</td>
<td>71.45 Deg</td>
<td>Passed</td>
</tr>
<tr>
<td>Rotation Angle Decay</td>
<td>58.0-67.0 ms</td>
<td>59.70 ms</td>
<td>Passed</td>
</tr>
</tbody>
</table>

**MOMENT ABOUT THE OCCIPITAL CONDYLE**

<table>
<thead>
<tr>
<th>Moment parameter</th>
<th>Specification</th>
<th>Test Results</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Occipital Moment</td>
<td>73.00- 88.00 N-m</td>
<td>76.32 N-m</td>
<td>Passed</td>
</tr>
<tr>
<td>Occipital Moment Decay</td>
<td>49.0-64.0 ms</td>
<td>55.40 ms</td>
<td>Passed</td>
</tr>
</tbody>
</table>

**HEAD ROTATION TIME WITH RESPECT TO THE OCCIPITAL CONDYLE MOMENT**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
<th>Test Results</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moment to Rotation Peak</td>
<td>2.0-16.0 ms</td>
<td>11.70 ms</td>
<td>Passed</td>
</tr>
</tbody>
</table>
Neck Test
Pre-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270
Date: 11-25-08

Sequential Test Number: 1    File: 270N 11-25-08
Laboratory Technician: A. Rudniski

- Pend Ax
  - Max: 29.8 [ ] at 0.009 [s]
  - Min: -4.2 [ ] at 0.039 [s]
  
- Head Rot
  - Max: 39.1 [degrees] at 0.055 [s]
  - Min: -17.9 [degrees] at 0.147 [s]

- Pend Vx
  - Max: 8.6 [m/s] at 0.198 [s]
  - Min: -0.0 [m/s] at -0.000 [s]

- Neck Mx
  - Max: 61.6 [N-m] at 0.046 [s]
  - Min: -26.6 [N-m] at 0.011 [s]

- Neck Fy
  - Max: 875.5 [N] at 0.052 [s]
  - Min: -274.1 [N] at 0.148 [s]

- Tot Rot
  - Max: 71.4 [degrees] at 0.057 [s]
  - Min: -29.3 [degrees] at 0.157 [s]

- MOCX
  - Max: 76.3 [N-m] at 0.045 [s]
  - Min: -25.0 [N-m] at 0.146 [s]
Abdominal Compression Test
Pre-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270
Date: 12-01-08

Sequential Test Number: 1 File: 270 Ab 12-01-08
Laboratory Technician: A. Rudniski

<table>
<thead>
<tr>
<th>TEST PARAMETER</th>
<th>SPECIFICATION</th>
<th>TEST RESULTS</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Temperature:</td>
<td>18.9-25.5 C</td>
<td>21.7 C</td>
<td>Passed</td>
</tr>
<tr>
<td>Lab Humidity:</td>
<td>10-70 %</td>
<td>23.00 %</td>
<td>Passed</td>
</tr>
<tr>
<td>Force at 12.95 mm :</td>
<td>104.00-162.00 N</td>
<td>134.13 N</td>
<td>Passed</td>
</tr>
<tr>
<td>Force at 19.05 mm :</td>
<td>162.98-220.99 N</td>
<td>198.38 N</td>
<td>Passed</td>
</tr>
<tr>
<td>Force at 25.40 mm :</td>
<td>221.97-280.02 N</td>
<td>272.85 N</td>
<td>Passed</td>
</tr>
<tr>
<td>Force at 33.02 mm :</td>
<td>324.99-391.00 N</td>
<td>379.81 N</td>
<td>Passed</td>
</tr>
</tbody>
</table>

ABDOMINAL COMPRESSION TEST
Lumbar Spine Test
Pre-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270
Date: 12-01-08
Sequential Test Number: 1
Laboratory Technician: A. Rudniski

<table>
<thead>
<tr>
<th>TEST PARAMETER</th>
<th>SPECIFICATION</th>
<th>TEST RESULTS</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Temperature:</td>
<td>18.9-25.5 C</td>
<td>21.7 C</td>
<td>Passed</td>
</tr>
<tr>
<td>Lab Humidity:</td>
<td>10-70 %</td>
<td>23.00 %</td>
<td>Passed</td>
</tr>
<tr>
<td>Force at 0 Deg:</td>
<td>0.00-26.69 N</td>
<td>3.65 N</td>
<td>Passed</td>
</tr>
<tr>
<td>Force at 20 Deg:</td>
<td>97.86-151.24 N</td>
<td>103.68 N</td>
<td>Passed</td>
</tr>
<tr>
<td>Force at 30 Deg</td>
<td>151.24-204.62 N</td>
<td>157.74 N</td>
<td>Passed</td>
</tr>
<tr>
<td>Force at 40 Deg</td>
<td>204.62-258.00 N</td>
<td>212.84 N</td>
<td>Passed</td>
</tr>
<tr>
<td>Return Angle</td>
<td>12 Deg Max</td>
<td>8.36 deg</td>
<td>Passed</td>
</tr>
</tbody>
</table>

LUMBAR SPINE FLEXION TEST

![Graph showing force vs. time and degrees vs. force for the lumbar spine test.]

C-15 8867-F214-03
# PRE-TEST DUMMY INSPECTION LIST

**CONFIGURED FOR** LEFT SIDE IMPACT

<table>
<thead>
<tr>
<th>PART</th>
<th>ITEMS CHECKED</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKIN</td>
<td>VISUAL INSPECTION</td>
<td>OK</td>
</tr>
<tr>
<td>HEAD</td>
<td>VISUAL, BALLAST, ACCELEROMETER MOUNT</td>
<td>OK</td>
</tr>
<tr>
<td>NECK</td>
<td>VISUAL, CABLE TORQUE</td>
<td>OK</td>
</tr>
<tr>
<td>SPINE BOX</td>
<td>VISUAL, BALLAST, WELDMENT, ACCELEROMETER MOUNT</td>
<td>OK</td>
</tr>
<tr>
<td>RIB CAGE</td>
<td>VISUAL, MEASURE, STIFFENERS</td>
<td>OK</td>
</tr>
<tr>
<td>STERNUM</td>
<td>VISUAL</td>
<td>OK</td>
</tr>
<tr>
<td>LUMBAR SPINE</td>
<td>VISUAL</td>
<td>OK</td>
</tr>
<tr>
<td>ABDOMEN</td>
<td>VISUAL</td>
<td>OK</td>
</tr>
<tr>
<td>PELVIS</td>
<td>VISUAL, PALPATE, ACCELEROMETER MOUNT</td>
<td>OK</td>
</tr>
<tr>
<td>UPPER LEGS</td>
<td>VISUAL</td>
<td>OK</td>
</tr>
<tr>
<td>KNEES</td>
<td>VISUAL, STOPS, INSERTS</td>
<td>OK</td>
</tr>
<tr>
<td>LOWER LEGS</td>
<td>VISUAL, RANGE OF MOTION</td>
<td>OK</td>
</tr>
<tr>
<td>ANKLES</td>
<td>VISUAL, RANGE OF MOTION</td>
<td>OK</td>
</tr>
<tr>
<td>FEET</td>
<td>VISUAL, RANGE OF MOTION</td>
<td>OK</td>
</tr>
<tr>
<td>JOINTS</td>
<td>1 TO 2 g RANGE</td>
<td>OK</td>
</tr>
<tr>
<td>OTHER</td>
<td>NONE</td>
<td>-</td>
</tr>
</tbody>
</table>

**REMARKS:** None
CALIBRATION TEST RESULTS
PRE-TEST

SID H3 NO.: 269

CONFIGURED FOR LEFT SIDE IMPACT
### CALIBRATION TEST RESULTS SUMMARY

**PRE-TEST**

**CONFIGURED FOR**  LEFT  SIDE IMPACT

<table>
<thead>
<tr>
<th>TEST</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXTERNAL DIMENSIONS</td>
<td>Passed all requirements.</td>
</tr>
<tr>
<td>THORACIC SHOCK ABSORBER TEST</td>
<td>Passed all requirements.</td>
</tr>
<tr>
<td>LATERAL THORAX IMPACT TEST</td>
<td>Passed all requirements.</td>
</tr>
<tr>
<td>LATERAL PELVIS IMPACT TEST</td>
<td>Passed all requirements.</td>
</tr>
<tr>
<td>HEAD DROP TEST*</td>
<td>Passed all requirements.</td>
</tr>
<tr>
<td>LATERAL NECK BEND TEST*</td>
<td>Passed all requirements.</td>
</tr>
<tr>
<td>ABDOMINAL COMPRESSION TEST*</td>
<td>Passed all requirements.</td>
</tr>
<tr>
<td>LUMBAR FLEXION TEST*</td>
<td>Passed all requirements.</td>
</tr>
</tbody>
</table>

* Test not required for SID certification.

**REMARKS:** None
## EXTERNAL DIMENSIONS

**PRE-TEST**

**CONFIGURED FOR LEFT SIDE IMPACT**

<table>
<thead>
<tr>
<th>SID H3 Serial No.: 269</th>
<th>Sequential Test Number: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date: 12/1/08</td>
<td>Laboratory Technician: A. Rudniski</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TEST PARAMETER</th>
<th>SPECIFICATION</th>
<th>TEST RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SH- Seated Height (mm)</td>
<td>889 - 909</td>
<td>899</td>
</tr>
<tr>
<td>RH- Rib Height (mm)</td>
<td>502 - 520</td>
<td>505</td>
</tr>
<tr>
<td>HP- Hip Pivot Height (mm)</td>
<td>99 ref.</td>
<td>99</td>
</tr>
<tr>
<td>RD- Rib from Back Line (mm)</td>
<td>229 - 241</td>
<td>234</td>
</tr>
<tr>
<td>KH- Knee Pivot from Back Line (mm)</td>
<td>511 - 526</td>
<td>516</td>
</tr>
<tr>
<td>KV- Knee Pivot to Floor (mm)</td>
<td>490 - 505</td>
<td>495</td>
</tr>
<tr>
<td>HW- Hip Width (mm)</td>
<td>356 - 391</td>
<td>381</td>
</tr>
</tbody>
</table>

**REMARKS:** None
**Shock Test Low (3.05 m/s)**

**PRE TEST**

**CONFIGURED FOR LEFT SIDE IMPACT**

<table>
<thead>
<tr>
<th>ATD Serial No: 269</th>
<th>Sequential Test Number: 1</th>
<th>File: 269SL 12-02-08</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date: 12-02-08</td>
<td>Laboratory Technician: A. Rudniski</td>
<td></td>
</tr>
</tbody>
</table>

**TEST PARAMETER** | **SPECIFICATION** | **TEST RESULTS** | **STATUS**

| Lab Temperature: | 18.9-25.5 C | 21.7 C | Passed |
| Lab Humidity:    | 10-70 %     | 18.00 % | Passed |
| Displacement:    | 30.00-35.00 mm | 31.26 mm | Passed |
| Maximum Force:   | 836.00-1125.00 N | 1051.76 N | Passed |

**Impact Test Velocity:** 3.05 m/s  
**Damper Identification:** 269  
**Damper Setting:** 5

**Displacement vs. Time**

Max: 31.3 [mm] at 0.041 [s]  
Min: -0.3 [mm] at 0.109 [s]

**Shock Force vs. Time**

Max: 1051.8 [N] at 0.017 [s]  
Min: -782.7 [N] at 0.109 [s]

---

**Graphs:**

1. **Displacement vs. Time**
   - Max: 31.3 [mm] at 0.041 [s]
   - Min: -0.3 [mm] at 0.109 [s]

2. **Shock Force vs. Time**
   - Max: 1051.8 [N] at 0.017 [s]
   - Min: -782.7 [N] at 0.109 [s]
Shock Test Medium (4.27 m/s)

PRE TEST

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269
Date: 12-03-08

Sequential Test Number: 1 File: 269SM 12-03-08
Laboratory Technician: A. Rudniski

<table>
<thead>
<tr>
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<th>STATUS</th>
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<tbody>
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<td>18.9-25.5 C</td>
<td>21.7 C</td>
<td>Passed</td>
</tr>
<tr>
<td>Lab Humidity:</td>
<td>10-70 %</td>
<td>18.00 %</td>
<td>Passed</td>
</tr>
<tr>
<td>Displacement:</td>
<td>32.00-37.00 mm</td>
<td>34.27 mm</td>
<td>Passed</td>
</tr>
<tr>
<td>Maximum Force:</td>
<td>1730.00-2099.00 N</td>
<td>2028.77 N</td>
<td>Passed</td>
</tr>
<tr>
<td>Impact Test Velocity:</td>
<td>4.27 m/s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Damper Identification:</td>
<td>269</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Damper Setting:</td>
<td>5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Displacement vs. Time
Max: 34.3 [mm] at 0.030 [s]  Min: -0.3 [mm] at 0.095 [s] CFC_1000

Shock Force vs. Time
Max: 2028.8 [N] at 0.010 [s]  Min: -783.3 [N] at 0.094 [s] CFC_1000
Shock Test High (6.10 m/s)

PRE TEST

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269
Date: 12-03-08
Sequential Test Number: 1  File: 269SH 12-03-08
Laboratory Technician: A. Rudniski

<table>
<thead>
<tr>
<th>TEST PARAMETER</th>
<th>SPECIFICATION</th>
<th>TEST RESULTS</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Temperature:</td>
<td>18.9-25.5 C</td>
<td>21.7 C</td>
<td>Passed</td>
</tr>
<tr>
<td>Lab Humidity:</td>
<td>10-70 %</td>
<td>18.00 %</td>
<td>Passed</td>
</tr>
<tr>
<td>Displacement:</td>
<td>33.00-40.00 mm</td>
<td>37.34 mm</td>
<td>Passed</td>
</tr>
<tr>
<td>Maximum Force:</td>
<td>3741.00-4448.00 N</td>
<td>4068.74 N</td>
<td>Passed</td>
</tr>
<tr>
<td>Impact Test Velocity:</td>
<td>6.10 m/s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Damper Identification:</td>
<td>269</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Damper Setting:</td>
<td>5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Displacement vs. Time
Max: 37.3 [mm] at 0.033 [s]
Min: -1.2 [mm] at 0.085 [s]

Shock Force vs. Time
Max: 4068.7 [N] at 0.007 [s]
Min: -1039.8 [N] at 0.084 [s]
Thorax Impact
Pre-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269
Date: 11-26-08
Sequential Test Number: 1  File: 269T1 11-26-08
Laboratory Technician: A. Rudniski

TEST PARAMETER          SPECIFICATION          TEST RESULTS          STATUS
Lab Temperature:          18.9-25.5 C          21.7 C                Passed
Lab Humidity:             10-70 %              21.00 %               Passed
Probe Velocity:           4.27- 4.33 m/s       4.30 m/s              Passed
Upper Rib Acceleration:   37.00-46.00 G's      40.99 G's             Passed
Lower Rib Acceleration:   37.00-46.00 G's      39.62 G's             Passed
Lower Spine Acceleration: 15.00-22.00 G's       18.69 G's             Passed

Pre-Test

TEST PARAMETER          SPECIFICATION          TEST RESULTS          STATUS
Lab Temperature:          18.9-25.5 C          21.7 C                Passed
Lab Humidity:             10-70 %              21.00 %               Passed
Probe Velocity:           4.27- 4.33 m/s       4.30 m/s              Passed
Upper Rib Acceleration:   37.00-46.00 G's      40.99 G's             Passed
Lower Rib Acceleration:   37.00-46.00 G's      39.62 G's             Passed
Lower Spine Acceleration: 15.00-22.00 G's       18.69 G's             Passed
Pelvic Impact Test
Pre-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269
Date: 12-01-08
Sequential Test Number: 1 File: 269P 12-01-08 Laboratory Technician: A. Rudniski

<table>
<thead>
<tr>
<th>TEST PARAMETER</th>
<th>SPECIFICATION</th>
<th>TEST RESULTS</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Temperature:</td>
<td>18.9-25.5 C</td>
<td>21.7 C</td>
<td>Passed</td>
</tr>
<tr>
<td>Lab Humidity:</td>
<td>10-70 %</td>
<td>23.00 %</td>
<td>Passed</td>
</tr>
<tr>
<td>Probe Velocity:</td>
<td>4.27- 4.33 m/s</td>
<td>4.30 m/s</td>
<td>Passed</td>
</tr>
<tr>
<td>Pelvis Y Acceleration:</td>
<td>40.00-60.00 G's</td>
<td>47.21 G's</td>
<td>Passed</td>
</tr>
<tr>
<td>Time Above 20 Gs</td>
<td>3.0-7.0 ms</td>
<td>5.6 ms</td>
<td>Passed</td>
</tr>
</tbody>
</table>

![Graphs showing G's vs Time for PVCN1 Ay and PVCN2 Ay](image-url)
Head Drop Test
Pre-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269
Date: 11-24-08

Sequential Test Number: 1    File: 269H 11-24-08
Laboratory Technician: A. Rudniski

TEST PARAMETER | SPECIFICATION | TEST RESULTS | STATUS
--- | --- | --- | ---
Lab Temperature: | 18.9-25.6 C | 21.7 C | Passed
Lab Humidity: | 10-70 % | 21.00 % | Passed
Peak Resultant Accel.: | 120-150 Gs | 140.53 Gs | Passed
Peak Lateral Accel.: | 15 Gs Max | 2.34 Gs | Passed
Curve PerCent NonModal: | < 15% | 2.56 % | Passed

![Graphs showing G's vs Time for various accelerations](image-url)
Neck Test
Pre-Test

CONFIGURED FOR LEFT SIDE IMPACT

<table>
<thead>
<tr>
<th>TEST PARAMETER</th>
<th>SPECIFICATION</th>
<th>TEST RESULTS</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Temperature:</td>
<td>20.6-22.2 C</td>
<td>21.7 C</td>
<td>Passed</td>
</tr>
<tr>
<td>Lab Humidity:</td>
<td>10-70 %</td>
<td>20.00 %</td>
<td>Passed</td>
</tr>
<tr>
<td>Impact Velocity:</td>
<td>6.89- 7.13 m/s</td>
<td>7.00 m/s</td>
<td>Passed</td>
</tr>
<tr>
<td>PENDULUM DELTA V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delta V at 10 ms:</td>
<td>1.96- 2.55 m/s</td>
<td>2.14 m/s</td>
<td>Passed</td>
</tr>
<tr>
<td>Delta V at 20 ms:</td>
<td>4.12- 5.10 m/s</td>
<td>4.33 m/s</td>
<td>Passed</td>
</tr>
<tr>
<td>Delta V at 30 ms:</td>
<td>5.73- 7.01 m/s</td>
<td>6.08 m/s</td>
<td>Passed</td>
</tr>
<tr>
<td>Delta V between 40-70 ms:</td>
<td>6.27- 7.64 m/s</td>
<td>7.57 m/s</td>
<td>Passed</td>
</tr>
<tr>
<td>D PLANE ROTATION</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Rotation:</td>
<td>66.0-82.0 Deg</td>
<td>71.66 Deg</td>
<td>Passed</td>
</tr>
<tr>
<td>Rotation Angle Decay:</td>
<td>58.0-67.0 ms</td>
<td>60.80 ms</td>
<td>Passed</td>
</tr>
<tr>
<td>MOMENT ABOUT THE OCCIPITAL CONDYLE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max Occipital Moment:</td>
<td>73.00- 88.00 N-m</td>
<td>77.73 N-m</td>
<td>Passed</td>
</tr>
<tr>
<td>Occiptal Moment Decay:</td>
<td>49.0-64.0 ms</td>
<td>54.50 ms</td>
<td>Passed</td>
</tr>
<tr>
<td>HEAD ROTATION TIME WITH RESPECT TO THE OCCIPITAL CONDYLE MOMENT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moment to Rotation Peak:</td>
<td>2.0-16.0 ms</td>
<td>9.40 ms</td>
<td>Passed</td>
</tr>
</tbody>
</table>
Neck Test
Pre-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269
Date: 11-25-08

Sequential Test Number: 1 File: 269N1 11-25-08
Laboratory Technician: A. Rudniski

Pend Ax
Max: 27.2 [l] at 0.009 [s]
Min: -2.8 [l] at 0.046 [s]

Arm Rot
Max: 32.6 [degrees] at 0.072 [s]
Min: -12.5 [degrees] at 0.166 [s]

Head Rot
Max: 42.4 [degrees] at 0.057 [s]
Min: -17.2 [degrees] at 0.157 [s]

Arm Rot
Max: 32.6 [degrees] at 0.072 [s]
Min: -12.5 [degrees] at 0.166 [s]

Head Rot
Max: 42.4 [degrees] at 0.057 [s]
Min: -17.2 [degrees] at 0.157 [s]

Tot Rot
Max: 71.7 [degrees] at 0.060 [s]
Min: -29.4 [degrees] at 0.160 [s]

Neck Fy
Max: 816.1 [N] at 0.043 [s]
Min: -236.8 [N] at 0.152 [s]

Neck Mx
Max: 63.7 [N-m] at 0.050 [s]
Min: -24.2 [N-m] at 0.012 [s]

Neck Test

Neck Mx
Max: 63.7 [N-m] at 0.050 [s]
Min: -24.2 [N-m] at 0.012 [s]

Neck Fy
Max: 816.1 [N] at 0.043 [s]
Min: -236.8 [N] at 0.152 [s]

Neck Test

Neck Mx
Max: 63.7 [N-m] at 0.050 [s]
Min: -24.2 [N-m] at 0.012 [s]

Neck Fy
Max: 816.1 [N] at 0.043 [s]
Min: -236.8 [N] at 0.152 [s]

Neck Test

Neck Mx
Max: 63.7 [N-m] at 0.050 [s]
Min: -24.2 [N-m] at 0.012 [s]

Neck Fy
Max: 816.1 [N] at 0.043 [s]
Min: -236.8 [N] at 0.152 [s]

Neck Test

Neck Mx
Max: 63.7 [N-m] at 0.050 [s]
Min: -24.2 [N-m] at 0.012 [s]

Neck Fy
Max: 816.1 [N] at 0.043 [s]
Min: -236.8 [N] at 0.152 [s]

Neck Test

Neck Mx
Max: 63.7 [N-m] at 0.050 [s]
Min: -24.2 [N-m] at 0.012 [s]

Neck Fy
Max: 816.1 [N] at 0.043 [s]
Min: -236.8 [N] at 0.152 [s]
**Abdominal Compression Test**

**Pre-Test**

**CONFIGURED FOR LEFT SIDE IMPACT**

**ATD Serial No:** 269  
**Date:** 12-01-08  
**Sequential Test Number:** 1  
**File:** 269 Ab 12-01-08  
**Laboratory Technician:** A. Rudniski

<table>
<thead>
<tr>
<th>TEST PARAMETER</th>
<th>SPECIFICATION</th>
<th>TEST RESULTS</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Temperature:</td>
<td>18.9-25.5 C</td>
<td>21.7 C</td>
<td>Passed</td>
</tr>
<tr>
<td>Lab Humidity:</td>
<td>10-70 %</td>
<td>23.00 %</td>
<td>Passed</td>
</tr>
<tr>
<td>Force at 12.95 mm</td>
<td>104.00-162.00 N</td>
<td>123.91 N</td>
<td>Passed</td>
</tr>
<tr>
<td>Force at 19.05 mm</td>
<td>162.98-220.99 N</td>
<td>189.99 N</td>
<td>Passed</td>
</tr>
<tr>
<td>Force at 25.40 mm</td>
<td>221.97-280.02 N</td>
<td>270.29 N</td>
<td>Passed</td>
</tr>
<tr>
<td>Force at 33.02 mm</td>
<td>324.99-391.00 N</td>
<td>386.01 N</td>
<td>Passed</td>
</tr>
</tbody>
</table>

**ABDOMINAL COMPRESSION TEST**

![Graph showing deflection over time and force over deflection](image-url)
Lumbar Spine Test
Pre-Test

ATD Serial No: 269
Date: 12-01-08
Sequential Test Number: 1 File: 269 Spine 12-01-08
Laboratory Technician: A. Rudniski

<table>
<thead>
<tr>
<th>TEST PARAMETER</th>
<th>SPECIFICATION</th>
<th>TEST RESULTS</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Temperature:</td>
<td>18.9-25.5 C</td>
<td>21.7 C</td>
<td>Passed</td>
</tr>
<tr>
<td>Lab Humidity:</td>
<td>10-70 %</td>
<td>23.0 %</td>
<td>Passed</td>
</tr>
<tr>
<td>Force at 0 Deg:</td>
<td>0.00-26.69 N</td>
<td>0.26 N</td>
<td>Passed</td>
</tr>
<tr>
<td>Force at 20 Deg:</td>
<td>97.86-151.24 N</td>
<td>112.29 N</td>
<td>Passed</td>
</tr>
<tr>
<td>Force at 30 Deg</td>
<td>151.24-204.62 N</td>
<td>167.40 N</td>
<td>Passed</td>
</tr>
<tr>
<td>Force at 40 Deg</td>
<td>204.62-258.00 N</td>
<td>221.46 N</td>
<td>Passed</td>
</tr>
<tr>
<td>Return Angle</td>
<td>12 Deg Max</td>
<td>6.41 deg</td>
<td>Passed</td>
</tr>
</tbody>
</table>

CONFIGURED FOR LEFT SIDE IMPACT

LUMBAR SPINE FLEXION TEST
## PRE-TEST DUMMY INSPECTION LIST

**CONFIGURED FOR LEFT SIDE IMPACT**

<table>
<thead>
<tr>
<th>PART</th>
<th>ITEMS CHECKED</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKIN</td>
<td>VISUAL INSPECTION</td>
<td>OK</td>
</tr>
<tr>
<td>HEAD</td>
<td>VISUAL, BALLAST, ACCELEROMETER MOUNT</td>
<td>OK</td>
</tr>
<tr>
<td>NECK</td>
<td>VISUAL, CABLE TORQUE</td>
<td>OK</td>
</tr>
<tr>
<td>SPINE BOX</td>
<td>VISUAL, BALLAST, WELDMENT, ACCELEROMETER MOUNT</td>
<td>OK</td>
</tr>
<tr>
<td>RIB CAGE</td>
<td>VISUAL, MEASURE, STIFFENERS</td>
<td>OK</td>
</tr>
<tr>
<td>STERNUM</td>
<td>VISUAL</td>
<td>OK</td>
</tr>
<tr>
<td>LUMBAR SPINE</td>
<td>VISUAL</td>
<td>OK</td>
</tr>
<tr>
<td>ABDOMEN</td>
<td>VISUAL</td>
<td>OK</td>
</tr>
<tr>
<td>PELVIS</td>
<td>VISUAL, PALPATE, ACCELEROMETER MOUNT</td>
<td>OK</td>
</tr>
<tr>
<td>UPPER LEGS</td>
<td>VISUAL</td>
<td>OK</td>
</tr>
<tr>
<td>KNEES</td>
<td>VISUAL, STOPS, INSERTS</td>
<td>OK</td>
</tr>
<tr>
<td>LOWER LEGS</td>
<td>VISUAL, RANGE OF MOTION</td>
<td>OK</td>
</tr>
<tr>
<td>ANKLES</td>
<td>VISUAL, RANGE OF MOTION</td>
<td>OK</td>
</tr>
<tr>
<td>FEET</td>
<td>VISUAL, RANGE OF MOTION</td>
<td>OK</td>
</tr>
<tr>
<td>JOINTS</td>
<td>1 TO 2 g RANGE</td>
<td>OK</td>
</tr>
<tr>
<td>OTHER</td>
<td>NONE</td>
<td>-</td>
</tr>
</tbody>
</table>

**REMARKS:** None
CALIBRATION TEST RESULTS

POST TEST

SID H3 NO.:  270

CONFIGURED FOR  LEFT  SIDE IMPACT
# CALIBRATION TEST RESULTS SUMMARY
## POST TEST
### CONFIGURED FOR LEFT SIDE IMPACT

<table>
<thead>
<tr>
<th>SID H3 Serial No.: 270</th>
<th>Sequential Test Number: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date: 4/7/09</td>
<td>Laboratory Technician: A. Rudniski</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TEST</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXTERNAL DIMENSIONS</td>
<td>Passed all requirements.</td>
</tr>
<tr>
<td>LATERAL THORAX IMPACT TEST</td>
<td>Passed all requirements.</td>
</tr>
<tr>
<td>LATERAL PELVIS IMPACT TEST</td>
<td>Passed all requirements.</td>
</tr>
<tr>
<td>HEAD DROP TEST*</td>
<td>Passed all requirements.</td>
</tr>
<tr>
<td>LATERAL NECK BEND TEST*</td>
<td>Passed all requirements.</td>
</tr>
<tr>
<td>ABDOMINAL COMPRESSION TEST*</td>
<td>Passed all requirements.</td>
</tr>
<tr>
<td>LUMBAR FLEXION TEST*</td>
<td>Passed all requirements.</td>
</tr>
</tbody>
</table>

* Test not required for SID certification.

**REMARKS:** None
**EXTERNAL DIMENSIONS**
**POST TEST**

**CONFIGURED FOR LEFT SIDE IMPACT**

SID H3 Serial No.: 270  
Sequential Test Number: 1  
Date: 4/2/09  
Laboratory Technician: A. Rudniski

<table>
<thead>
<tr>
<th>TEST PARAMETER</th>
<th>SPECIFICATION</th>
<th>TEST RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SH- Seated Height (mm)</td>
<td>889 - 909</td>
<td>899</td>
</tr>
<tr>
<td>RH- Rib Height (mm)</td>
<td>502 - 520</td>
<td>505</td>
</tr>
<tr>
<td>HP- Hip Pivot Height (mm)</td>
<td>99 ref.</td>
<td>99</td>
</tr>
<tr>
<td>RD- Rib from Back Line (mm)</td>
<td>229 - 241</td>
<td>234</td>
</tr>
<tr>
<td>KH- Knee Pivot from Back Line (mm)</td>
<td>511 - 526</td>
<td>518</td>
</tr>
<tr>
<td>KV- Knee Pivot to Floor (mm)</td>
<td>490 - 505</td>
<td>495</td>
</tr>
<tr>
<td>HW- Hip Width (mm)</td>
<td>356 - 391</td>
<td>384</td>
</tr>
</tbody>
</table>

**REMARKS:** None
Thorax Impact
Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270
Date: 04-06-09

Sequential Test Number: 1  File: 270T2 04-06-09
Laboratory Technician: A. Rudniski

<table>
<thead>
<tr>
<th>TEST PARAMETER</th>
<th>SPECIFICATION</th>
<th>TEST RESULTS</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Temperature:</td>
<td>18.9-25.5 C</td>
<td>22.2 C</td>
<td>Passed</td>
</tr>
<tr>
<td>Lab Humidity:</td>
<td>10-70 %</td>
<td>28.00 %</td>
<td>Passed</td>
</tr>
<tr>
<td>Probe Velocity:</td>
<td>4.27- 4.33 m/s</td>
<td>4.31 m/s</td>
<td>Passed</td>
</tr>
<tr>
<td>Upper Rib Acceleration:</td>
<td>37.00-46.00 G's</td>
<td>41.27 G's</td>
<td>Passed</td>
</tr>
<tr>
<td>Lower Rib Acceleration:</td>
<td>37.00-46.00 G's</td>
<td>41.60 G's</td>
<td>Passed</td>
</tr>
<tr>
<td>Lower Spine Acceleration:</td>
<td>15.00-22.00 G's</td>
<td>21.78 G's</td>
<td>Passed</td>
</tr>
</tbody>
</table>

RBLU1 Ay Max: 41.6 [G's] at 0.017 [s] Min: -38.3 [G's] at 0.026 [s] CFC_1000
RBLU2 Ay Max: 41.3 [G's] at 0.017 [s] Min: -15.3 [G's] at 0.026 [s] FIR_100
RBLL1 Ay Max: 43.2 [G's] at 0.021 [s] Min: -23.4 [G's] at 0.027 [s] CFC_1000
RBLL2 Ay Max: 41.6 [G's] at 0.021 [s] Min: -15.9 [G's] at 0.021 [s] FIR_100
SPNL1 Ay Max: 23.0 [G's] at 0.025 [s] Min: -5.8 [G's] at 0.044 [s] CFC_1000
SPNL2 Ay Max: 21.8 [G's] at 0.025 [s] Min: -5.2 [G's] at 0.050 [s] FIR_100
# Pelvis Impact

**Post-Test**

**CONFIGURED FOR LEFT SIDE IMPACT**

ATD Serial No: 270  
Date: 04-06-09  
Sequential Test Number: 1  
File: 270P 04-06-09  
Laboratory Technician: A. Rudniski

<table>
<thead>
<tr>
<th>TEST PARAMETER</th>
<th>SPECIFICATION</th>
<th>TEST RESULTS</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Temperature: 18.9-25.5 C</td>
<td>22.2 C</td>
<td>Passed</td>
<td></td>
</tr>
<tr>
<td>Lab Humidity: 10-70 %</td>
<td>28.00 %</td>
<td>Passed</td>
<td></td>
</tr>
<tr>
<td>Probe Velocity: 4.27-4.33 m/s</td>
<td>4.31 m/s</td>
<td>Passed</td>
<td></td>
</tr>
<tr>
<td>Pelvis Y Acceleration: 40.00-60.00 G's</td>
<td>49.39 G's</td>
<td>Passed</td>
<td></td>
</tr>
<tr>
<td>Time Above 20 Gs: 3.0-7.0 ms</td>
<td>5.7 ms</td>
<td>Passed</td>
<td></td>
</tr>
</tbody>
</table>

**Diagram:**

![G-force Graphs](C-35.png)

C-35  
8867-F214-03
Head Drop Test
Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270
Date: 04-02-09

Sequential Test Number: 1 File: 270H1 04-02-09
Laboratory Technician: A.Rudniski

<table>
<thead>
<tr>
<th>TEST PARAMETER</th>
<th>SPECIFICATION</th>
<th>TEST RESULTS</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Temperature:</td>
<td>18.9-25.6 C</td>
<td>21.1 C</td>
<td>Passed</td>
</tr>
<tr>
<td>Lab Humidity:</td>
<td>10-70 %</td>
<td>25.00 %</td>
<td>Passed</td>
</tr>
<tr>
<td>Peak Resultant Accel.:</td>
<td>120-150 Gs</td>
<td>148.08 Gs</td>
<td>Passed</td>
</tr>
<tr>
<td>Peak Lateral Accel.:</td>
<td>15 Gs Max</td>
<td>1.89 Gs</td>
<td>Passed</td>
</tr>
<tr>
<td>Curve PerCent NonModal:</td>
<td>&lt; 15%</td>
<td>1.75 %</td>
<td>Passed</td>
</tr>
</tbody>
</table>

HDCG Ax Max: 1.9 [G's] at 0.006 [s] Min: -4.1 [G's] at 0.008 [s]
HDCG Ay Max: 2.0 [G's] at 0.009 [s] Min: -87.3 [G's] at 0.007 [s]
HDCG Az Max: 1.1 [G's] at 0.013 [s] Min: -119.6 [G's] at 0.007 [s]
HDCG Ar Max: 148.1 [G's] at 0.007 [s] Min: 0.0 [G's] at -0.009 [s]
# Neck Test

**Post-Test**

**CONFIGURED FOR LEFT SIDE IMPACT**

<table>
<thead>
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<tr>
<td>Lab Humidity:</td>
<td>10-70 %</td>
<td>24.00 %</td>
<td>Passed</td>
</tr>
<tr>
<td>Impact Velocity:</td>
<td>6.89- 7.13 m/s</td>
<td>7.00 m/s</td>
<td>Passed</td>
</tr>
<tr>
<td><strong>PENDULUM DELTA V</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delta V at 10 ms:</td>
<td>1.96- 2.55 m/s</td>
<td>2.31 m/s</td>
<td>Passed</td>
</tr>
<tr>
<td>Delta V at 20 ms:</td>
<td>4.12- 5.10 m/s</td>
<td>4.67 m/s</td>
<td>Passed</td>
</tr>
<tr>
<td>Delta V at 30 ms:</td>
<td>5.73- 7.01 m/s</td>
<td>6.57 m/s</td>
<td>Passed</td>
</tr>
<tr>
<td>Delta V between 40-70 ms:</td>
<td>6.27- 7.64 m/s</td>
<td>7.50 m/s</td>
<td>Passed</td>
</tr>
<tr>
<td><strong>D PLANE ROTATION</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Rotation:</td>
<td>66.0-82.0 Deg</td>
<td>70.66 Deg</td>
<td>Passed</td>
</tr>
<tr>
<td>Rotation Angle Decay:</td>
<td>58.0-67.0 ms</td>
<td>58.50 ms</td>
<td>Passed</td>
</tr>
<tr>
<td><strong>MOMENT ABOUT THE OCCIPITAL CONDYLE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max Occipital Moment:</td>
<td>73.00- 88.00 N-m</td>
<td>82.06 N-m</td>
<td>Passed</td>
</tr>
<tr>
<td>Occipital Moment Decay:</td>
<td>49.0-64.0 ms</td>
<td>55.30 ms</td>
<td>Passed</td>
</tr>
<tr>
<td><strong>HEAD ROTATION TIME WITH RESPECT TO THE OCCIPITAL CONDYLE MOMENT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moment to Rotation Peak:</td>
<td>2.0-16.0 ms</td>
<td>12.10 ms</td>
<td>Passed</td>
</tr>
</tbody>
</table>
Neck Test
Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 270
Date: 04-02-09

Sequential Test Number: 1    File: 270N1 04-02-09
Laboratory Technician: A. Rudniski

Head Rot
Max: 38.9 [degrees] at 0.054 [s]
Min: -17.0 [degrees] at 0.148 [s]

Arm Rot
Max: 34.3 [degrees] at 0.069 [s]
Min: -12.7 [degrees] at 0.167 [s]

Neck Mx
Max: 67.4 [N-m] at 0.046 [s]
Min: -27.0 [N-m] at 0.012 [s]

Neck Fy
Max: 909.0 [N] at 0.052 [s]
Min: -275.7 [N] at 0.144 [s]

Tot Rot
Max: 70.7 [degrees] at 0.058 [s]
Min: -27.9 [degrees] at 0.154 [s]

MOCX
Max: 82.1 [N-m] at 0.046 [s]
Min: -25.9 [N-m] at 0.148 [s]
## Abdominal Compression Test
### Post-Test

**CONFIGURED FOR LEFT SIDE IMPACT**

**ATD Serial No:** 270  
**Date:** 04-02-09  
**Sequential Test Number:** 1  
**File:** 270Ab 04-02-09  
**Laboratory Technician:** A. Rudniski

<table>
<thead>
<tr>
<th>TEST PARAMETER</th>
<th>SPECIFICATION</th>
<th>TEST RESULTS</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Temperature:</td>
<td>18.9-25.5 °C</td>
<td>21.1 °C</td>
<td>Passed</td>
</tr>
<tr>
<td>Lab Humidity:</td>
<td>10-70 %</td>
<td>23.00 %</td>
<td>Passed</td>
</tr>
<tr>
<td>Force at 12.95 mm:</td>
<td>104.00-162.00 N</td>
<td>119.17 N</td>
<td>Passed</td>
</tr>
<tr>
<td>Force at 19.05 mm:</td>
<td>162.98-220.99 N</td>
<td>179.03 N</td>
<td>Passed</td>
</tr>
<tr>
<td>Force at 25.40 mm:</td>
<td>221.97-280.02 N</td>
<td>247.30 N</td>
<td>Passed</td>
</tr>
<tr>
<td>Force at 33.02 mm:</td>
<td>324.99-391.00 N</td>
<td>353.52 N</td>
<td>Passed</td>
</tr>
</tbody>
</table>

### ABDOMINAL COMPRESSION TEST

![Graph of deflection vs. time and force vs. deflection](image-url)

- Vertical axis on the left: Deflection (in mm)
- Horizontal axis on the bottom: Time [s]
- Vertical axis on the right: Force [N]
**Lumbar Spine Test**

**Post-Test**

**CONFIGURED FOR LEFT SIDE IMPACT**

ATD Serial No: 270  
Date: 04-03-09

Sequential Test Number: 1  
File: 270Spine 04-03-09  
Laboratory Technician: A. Rudniski

<table>
<thead>
<tr>
<th>TEST PARAMETER</th>
<th>SPECIFICATION</th>
<th>TEST RESULTS</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Temperature:</td>
<td>18.9-25.5 C</td>
<td>21.7 C</td>
<td>Passed</td>
</tr>
<tr>
<td>Lab Humidity:</td>
<td>10-70 %</td>
<td>44.00 %</td>
<td>Passed</td>
</tr>
<tr>
<td>Force at 0 Deg:</td>
<td>0.00-26.69 N</td>
<td>7.57 N</td>
<td>Passed</td>
</tr>
<tr>
<td>Force at 20 Deg:</td>
<td>97.86-151.24 N</td>
<td>111.51 N</td>
<td>Passed</td>
</tr>
<tr>
<td>Force at 30 Deg</td>
<td>151.24-204.62 N</td>
<td>161.65 N</td>
<td>Passed</td>
</tr>
<tr>
<td>Force at 40 Deg</td>
<td>204.62-258.00 N</td>
<td>213.62 N</td>
<td>Passed</td>
</tr>
<tr>
<td>Return Angle</td>
<td>12 Deg Max</td>
<td>7.52 deg</td>
<td>Passed</td>
</tr>
</tbody>
</table>

**LUMBAR SPINE FLEXION TEST**

![Graph](image-url)
## POST TEST DUMMY INSPECTION LIST

**CONFIGURED FOR LEFT SIDE IMPACT**

SID H3 Serial No.: 270  
Sequential Test Number: 1  
Date: 4/2/09  
Laboratory Technician: A. Rudniski

<table>
<thead>
<tr>
<th>PART</th>
<th>ITEMS CHECKED</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKIN</td>
<td>VISUAL INSPECTION</td>
<td>OK</td>
</tr>
<tr>
<td>HEAD</td>
<td>VISUAL, BALLAST, ACCELEROMETER MOUNT</td>
<td>OK</td>
</tr>
<tr>
<td>NECK</td>
<td>VISUAL, CABLE TORQUE</td>
<td>OK</td>
</tr>
<tr>
<td>SPINE BOX</td>
<td>VISUAL, BALLAST, WELDMENT, ACCELEROMETER MOUNT</td>
<td>OK</td>
</tr>
<tr>
<td>RIB CAGE</td>
<td>VISUAL, MEASURE, STIFFENERS</td>
<td>OK</td>
</tr>
<tr>
<td>STERNUM</td>
<td>VISUAL</td>
<td>OK</td>
</tr>
<tr>
<td>LUMBAR SPINE</td>
<td>VISUAL</td>
<td>OK</td>
</tr>
<tr>
<td>ABDOMEN</td>
<td>VISUAL</td>
<td>OK</td>
</tr>
<tr>
<td>PELVIS</td>
<td>VISUAL, PALPATE, ACCELEROMETER MOUNT</td>
<td>OK</td>
</tr>
<tr>
<td>UPPER LEGS</td>
<td>VISUAL</td>
<td>OK</td>
</tr>
<tr>
<td>KNEES</td>
<td>VISUAL, STOP, INSERTS</td>
<td>OK</td>
</tr>
<tr>
<td>LOWER LEGS</td>
<td>VISUAL, RANGE OF MOTION</td>
<td>OK</td>
</tr>
<tr>
<td>ANKLES</td>
<td>VISUAL, RANGE OF MOTION</td>
<td>OK</td>
</tr>
<tr>
<td>FEET</td>
<td>VISUAL, RANGE OF MOTION</td>
<td>OK</td>
</tr>
<tr>
<td>JOINTS</td>
<td>1 TO 2 g RANGE</td>
<td>OK</td>
</tr>
<tr>
<td>OTHER</td>
<td>NONE</td>
<td>-</td>
</tr>
</tbody>
</table>

**REMARKS:** None
CALIBRATION TEST RESULTS

POST TEST

SID H3 NO.: 269

CONFIGURED FOR LEFT SIDE IMPACT
## CALIBRATION TEST RESULTS SUMMARY

**POST TEST**

**CONFIGURED FOR LEFT SIDE IMPACT**

<table>
<thead>
<tr>
<th>SID H3 Serial No.</th>
<th>269</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>4/7/09</td>
</tr>
<tr>
<td>Laboratory Technician</td>
<td>A. Rudniski</td>
</tr>
</tbody>
</table>

### TEST COMMENTS

<table>
<thead>
<tr>
<th>TEST</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXTERNAL DIMENSIONS</td>
<td>Passed all requirements.</td>
</tr>
<tr>
<td>LATERAL THORAX IMPACT TEST</td>
<td>Passed all requirements.</td>
</tr>
<tr>
<td>LATERAL PELVIS IMPACT TEST</td>
<td>Passed all requirements.</td>
</tr>
<tr>
<td>HEAD DROP TEST*</td>
<td>Passed all requirements.</td>
</tr>
<tr>
<td>LATERAL NECK BEND TEST*</td>
<td>Passed all requirements.</td>
</tr>
<tr>
<td>ABDOMINAL COMPRESSION TEST*</td>
<td>Passed all requirements.</td>
</tr>
<tr>
<td>LUMBAR FLEXION TEST*</td>
<td>Passed all requirements.</td>
</tr>
</tbody>
</table>

* Test not required for SID certification.

**REMARKS:** None
## EXTERNAL DIMENSIONS
### POST TEST
### CONFIGURED FOR LEFT SIDE IMPACT

<table>
<thead>
<tr>
<th>SID H3 Serial No.:</th>
<th>269</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td>4/2/09</td>
</tr>
<tr>
<td>Laboratory Technician:</td>
<td>A. Rudniski</td>
</tr>
</tbody>
</table>

### TEST PARAMETER | SPECIFICATION | TEST RESULTS
------- | -------------- | ------------- |
| SH- Seated Height (mm) | 889 - 909 | 899 |
| RH- Rib Height (mm) | 502 - 520 | 505 |
| HP- Hip Pivot Height (mm) | 99 ref. | 99 |
| RD- Rib from Back Line (mm) | 229 - 241 | 234 |
| KH- Knee Pivot from Back Line (mm) | 511 - 526 | 516 |
| KV- Knee Pivot to Floor (mm) | 490 - 505 | 495 |
| HW- Hip Width (mm) | 356 - 391 | 381 |

### REMARKS: None
Thorax Impact Test
Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269
Date: 04-07-09

Sequential Test Number: 1 File: 269T 04-07-09
Laboratory Technician: A. Rudniski

<table>
<thead>
<tr>
<th>TEST PARAMETER</th>
<th>SPECIFICATION</th>
<th>TEST RESULTS</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Temperature:</td>
<td>18.9-25.5 C</td>
<td>21.7 C</td>
<td>Passed</td>
</tr>
<tr>
<td>Lab Humidity:</td>
<td>10-70 %</td>
<td>22.00 %</td>
<td>Passed</td>
</tr>
<tr>
<td>Probe Velocity:</td>
<td>4.27-4.33 m/s</td>
<td>4.31 m/s</td>
<td>Passed</td>
</tr>
<tr>
<td>Upper Rib Acceleration:</td>
<td>37.00-46.00 G's</td>
<td>39.26 G's</td>
<td>Passed</td>
</tr>
<tr>
<td>Lower Rib Acceleration:</td>
<td>37.00-46.00 G's</td>
<td>39.33 G's</td>
<td>Passed</td>
</tr>
<tr>
<td>Lower Spine Acceleration:</td>
<td>15.00-22.00 G's</td>
<td>17.48 G's</td>
<td>Passed</td>
</tr>
</tbody>
</table>

RBLU1 Ay Max: 37.9 [G's] at 0.022 [s]
Min: -21.9 [G's] at 0.028 [s]

RBLU2 Ay Max: 39.3 [G's] at 0.022 [s]
Min: -14.5 [G's] at 0.028 [s]

RBLL1 Ay Max: 43.5 [G's] at 0.022 [s]
Min: -23.1 [G's] at 0.027 [s]

RBLL2 Ay Max: 39.3 [G's] at 0.022 [s]
Min: -14.1 [G's] at 0.028 [s]

SPNL1 Ay Max: 20.7 [G's] at 0.026 [s]
Min: -4.2 [G's] at 0.046 [s]

SPNL2 Ay Max: 17.5 [G's] at 0.027 [s]
Min: -4.1 [G's] at 0.046 [s]

C-45
8867-F214-03
**Pelvis Impact Test**  
*Post-Test*

**CONFIGURED FOR LEFT SIDE IMPACT**

**ATD Serial No:** 269  
**Date:** 04-07-09  
**Sequential Test Number:** 1  
**File:** 269P1 04-07-09  
**Laboratory Technician:** A. Rudniski

<table>
<thead>
<tr>
<th>TEST PARAMETER</th>
<th>SPECIFICATION</th>
<th>TEST RESULTS</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Temperature:</td>
<td>18.9-25.5 C</td>
<td>21.7 C</td>
<td>Passed</td>
</tr>
<tr>
<td>Lab Humidity:</td>
<td>10-70 %</td>
<td>21.00 %</td>
<td>Passed</td>
</tr>
<tr>
<td>Probe Velocity:</td>
<td>4.27 - 4.33 m/s</td>
<td>4.31 m/s</td>
<td>Passed</td>
</tr>
<tr>
<td>Pelvis Y Acceleration:</td>
<td>40.00-60.00 G's</td>
<td>54.58 G's</td>
<td>Passed</td>
</tr>
<tr>
<td>Time Above 20 Gs</td>
<td>3.0-7.0 ms</td>
<td>5.7 ms</td>
<td>Passed</td>
</tr>
</tbody>
</table>

---

![Graphs showing G's vs Time](image-url)
Head Drop Test
Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269
Date: 04-01-09
Sequential Test Number: 1 File: 269H 04-01-09
Laboratory Technician: A.Rudniski

<table>
<thead>
<tr>
<th>TEST PARAMETER</th>
<th>SPECIFICATION</th>
<th>TEST RESULTS</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Temperature:</td>
<td>18.9-25.6 C</td>
<td>21.7 C</td>
<td>Passed</td>
</tr>
<tr>
<td>Lab Humidity:</td>
<td>10-70 %</td>
<td>34.00 %</td>
<td>Passed</td>
</tr>
<tr>
<td>Peak Resultant Accel.:</td>
<td>120-150 Gs</td>
<td>139.35 Gs</td>
<td>Passed</td>
</tr>
<tr>
<td>Peak Lateral Accel.:</td>
<td>15 Gs Max</td>
<td>1.21 Gs</td>
<td>Passed</td>
</tr>
<tr>
<td>Curve PerCent NonModal:</td>
<td>&lt; 15%</td>
<td>2.42 %</td>
<td>Passed</td>
</tr>
</tbody>
</table>

HDCG Ax
Max: 1.2 [G's] at 0.012 [s]
Min: -8.2 [G's] at 0.007 [s]

HDCG Ay
Max: 1.3 [G's] at 0.009 [s]
Min: -79.2 [G's] at 0.006 [s]

HDCG Az
Max: 0.8 [G's] at 0.018 [s]
Min: -114.9 [G's] at 0.006 [s]

HDCG Ar
Max: 139.4 [G's] at 0.006 [s]
Min: 0.0 [G's] at -0.002 [s]
**Neck Test**

**Post-Test**

**CONFIGURED FOR LEFT SIDE IMPACT**

<table>
<thead>
<tr>
<th>TEST PARAMETER</th>
<th>SPECIFICATION</th>
<th>TEST RESULTS</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Temperature:</td>
<td>20.6-22.2 C</td>
<td>21.7 C</td>
<td>Passed</td>
</tr>
<tr>
<td>Lab Humidity:</td>
<td>10-70 %</td>
<td>24.00 %</td>
<td>Passed</td>
</tr>
<tr>
<td>Impact Velocity:</td>
<td>6.89-7.13 m/s</td>
<td>6.99 m/s</td>
<td>Passed</td>
</tr>
</tbody>
</table>

**PENDULUM DELTA V**

<table>
<thead>
<tr>
<th></th>
<th>1.96-2.55 m/s</th>
<th>2.30 m/s</th>
<th>Passed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delta V at 10 ms:</td>
<td>4.12-5.10 m/s</td>
<td>4.65 m/s</td>
<td>Passed</td>
</tr>
<tr>
<td>Delta V at 30 ms:</td>
<td>5.73-7.01 m/s</td>
<td>6.57 m/s</td>
<td>Passed</td>
</tr>
<tr>
<td>Delta V between 40-70 ms:</td>
<td>6.27-7.64 m/s</td>
<td>7.59 m/s</td>
<td>Passed</td>
</tr>
</tbody>
</table>

**D PLANE ROTATION**

<table>
<thead>
<tr>
<th></th>
<th>66.0-82.0 Deg</th>
<th>70.79 Deg</th>
<th>Passed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Rotation:</td>
<td>58.0-67.0 ms</td>
<td>59.40 ms</td>
<td>Passed</td>
</tr>
</tbody>
</table>

**MOMENT ABOUT THE OCCIPITAL CONDYLE**

<table>
<thead>
<tr>
<th></th>
<th>73.00-88.00 N-m</th>
<th>78.12 N-m</th>
<th>Passed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Occipital Moment:</td>
<td>49.0-64.0 ms</td>
<td>53.90 ms</td>
<td>Passed</td>
</tr>
</tbody>
</table>

**HEAD ROTATION TIME WITH RESPECT TO THE OCCIPITAL CONDYLE MOMENT**

<table>
<thead>
<tr>
<th></th>
<th>2.0-16.0 ms</th>
<th>12.00 ms</th>
<th>Passed</th>
</tr>
</thead>
</table>
Neck Test
Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269
Date: 04-02-09

Pend Ax
Max: 31.3 [J] at 0.002 [s]
Min: -4.9 [J] at 0.040 [s]

CFC_180

Head Rot
Max: 43.5 [degrees] at 0.053 [s]
Min: -16.2 [degrees] at 0.161 [s]

CFC_180

Arm Rot
Max: 31.3 [degrees] at 0.065 [s]
Min: -11.5 [degrees] at 0.162 [s]

CFC_180

Neck Mx
Max: 64.9 [N-m] at 0.047 [s]
Min: -25.3 [N-m] at 0.009 [s]

CFC_600

Neck Fy
Max: 814.2 [N] at 0.052 [s]
Min: -233.7 [N] at 0.145 [s]

CFC_1000

Tot Rot
Max: 70.8 [degrees] at 0.059 [s]
Min: -27.6 [degrees] at 0.161 [s]

CFC_180

MOCX
Max: 78.1 [N-m] at 0.047 [s]
Min: -24.5 [N-m] at 0.146 [s]
### Abdominal Compression Test

#### Post-Test

**CONFIGURED FOR LEFT SIDE IMPACT**

**ATD Serial No:** 269  
**Date:** 04-02-09  
**Sequential Test Number:** 1  
**File:** 269Ab 04-02-09  
**Laboratory Technician:** A. Rudniski

<table>
<thead>
<tr>
<th>TEST PARAMETER</th>
<th>SPECIFICATION</th>
<th>TEST RESULTS</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Temperature:</td>
<td>18.9-25.5 °C</td>
<td>21.1 °C</td>
<td>Passed</td>
</tr>
<tr>
<td>Lab Humidity:</td>
<td>10-70 %</td>
<td>24.00 %</td>
<td>Passed</td>
</tr>
<tr>
<td>Force at 12.95 mm</td>
<td>104.00-162.00 N</td>
<td>120.99 N</td>
<td>Passed</td>
</tr>
<tr>
<td>Force at 19.05 mm</td>
<td>162.98-220.99 N</td>
<td>187.43 N</td>
<td>Passed</td>
</tr>
<tr>
<td>Force at 25.40 mm</td>
<td>221.97-280.02 N</td>
<td>264.45 N</td>
<td>Passed</td>
</tr>
<tr>
<td>Force at 33.02 mm</td>
<td>324.99-391.00 N</td>
<td>381.63 N</td>
<td>Passed</td>
</tr>
</tbody>
</table>

---

**ABDOMINAL COMPRESSION TEST**

![Graph showing deflection over time and force vs. deflection](image-url)

---

C-50
Thorax Impact Test
Post-Test

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial No: 269
Date: 04-07-09
Sequential Test Number: 1 File: 269T 04-07-09
Laboratory Technician: A. Rudniski

TEST PARAMETER | SPECIFICATION | TEST RESULTS | STATUS
---|---|---|---
Lab Temperature: | 18.9-25.5 C | 21.7 C | Passed
Lab Humidity: | 10-70 % | 22.00 % | Passed
Probe Velocity: | 4.27 - 4.33 m/s | 4.31 m/s | Passed
Upper Rib Acceleration: | 37.00-46.00 G's | 39.26 G's | Passed
Lower Rib Acceleration: | 37.00-46.00 G's | 39.33 G's | Passed
Lower Spine Acceleration: | 15.00-22.00 G's | 17.48 G's | Passed

---

**RBLU1 Ay** Max: 37.9 [G's] at 0.022 [s] Min: -21.9 [G's] at 0.028 [s]
**CFC_1000**

**RBLU2 Ay** Max: 39.3 [G's] at 0.022 [s] Min: -14.5 [G's] at 0.028 [s]
**FIR_100**

**RBLL1 Ay** Max: 43.5 [G's] at 0.022 [s] Min: -23.1 [G's] at 0.027 [s]
**CFC_1000**

**RBLL2 Ay** Max: 39.3 [G's] at 0.022 [s] Min: -14.1 [G's] at 0.028 [s]
**FIR_100**

**SPNL1 Ay** Max: 20.7 [G's] at 0.026 [s] Min: -4.2 [G's] at 0.046 [s]
**CFC_1000**

**SPNL2 Ay** Max: 17.5 [G's] at 0.027 [s] Min: -4.1 [G's] at 0.046 [s]
**FIR_100**
## POST TEST DUMMY INSPECTION LIST

**CONFIGURED FOR** LEFT SIDE IMPACT

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<td>HEAD</td>
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**REMARKS:** None
APPENDIX D

TEST EQUIPMENT AND CALIBRATION INFORMATION
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**REMARKS:** None
# TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

## VEHICLE AND MDB INSTRUMENTATION

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**REMARKS:** None