REPORT NUMBER: 208-MGA-2009-009

VEHICLE SAFETY COMPLIANCE TESTING
FOR
FMVSS 208, OCCUPANT CRASH PROTECTION
FMVSS 212, WINDSHIELD MOUNTING
FMVSS 219, WINDSHIELD INTRUSION (PARTIAL)
FMVSS 301, FUEL SYSTEM INTEGRITY

GENERAL MOTORS CORP.
2009 CHEVROLET COBALT PASSENGER CAR
NHTSA NO.: C90106

PREPARED BY:
MGA RESEARCH CORPORATION
5000 WARREN ROAD
BURLINGTON, WI 53105

TEST DATES: FEBRUARY 4, 2009 – MARCH 31, 2009

FINAL REPORT DATE: JANUARY 22, 2010

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
1200 NEW JERSEY AVENUE, S.E., NVS-220
WASHINGTON, D.C. 20590
This final test report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, in response to Contract Number DTNH22-08-D-00086.

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Prepared by: Jeff Lewandowski, Project Engineer
Date: January 22, 2010

Reviewed by: David Winkelbauer, Facility Director
Date: January 22, 2010

FINAL REPORT ACCEPTED BY OVSC:

Accepted By: ____________________________
Acceptance Date: January 22, 2010
**Final Report of FMVSS 208 Compliance Testing of a 2009 Chevrolet Cobalt**

**Author(s):**
Jeff Lewandowski, Project Engineer

**Abstract:**
Compliance tests were conducted on the subject 2009 Chevrolet Cobalt in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP208-14 for the determination of FMVSS 208 compliance. Test failures identified were as follows:

**TEST FAILURES:**
None

**Key Words:**
- Frontal Impact
- 40 kmph Vehicle Safety Compliance Testing
- FMVSS 208, “Occupant Crash Protection”
- FMVSS 212, “Windshield Mounting”
- FMVSS 219, (partial), “Windshield Zone Intrusion”
- FMVSS 301, “Fuel System Integrity”

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SECTION 1
PURPOSE OF COMPLIANCE TESTS

This Federal Motor Vehicle Safety Standard 208 compliance test is part of a program conducted for the National Highway Traffic Safety Administration (NHTSA) by MGA Research Corporation (MGA) under Contract No. DTNH22-08-D-00086. The purpose of this test was to determine whether the subject vehicle, a 2009 Chevrolet Cobalt, NHTSA No. C90106, meets certain performance requirements of FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Mounting"; FMVSS 219, "Windshield Zone Intrusion"; and FMVSS 301, "Fuel System Integrity". The compliance test was conducted in accordance with OVSC Laboratory Test Procedure No. TP208-14 dated April 16, 2008.
SECTION 2
TESTS PERFORMED

Test Vehicle: 2009 Chevrolet Cobalt  
Test Program: FMVSS 208 Compliance  
NHTSA No.: C90106  
Test Dates: 2/4/09 - 3/31/09

The following checked items indicate the tests that were performed:

1. Rear seating position seat belts
2. Air bag labels (S4.5.1)
3. Readiness indicator (S4.5.2)
4. Passenger air bag manual cut-off device (S4.5.4)
5. Lap belt lockability (S7.1.1.5)
6. Seat belt warning system (S7.3)
7. Seat belt contact force (S7.4.3)
8. Seat belt latch plate access (S7.4.4)
9. Seat belt retraction (S7.4.5)
10. Seat belt guides and hardware (S7.4.6)
11. Air bag suppression telltale (S19.2.2)
12. Suppression tests with 12-month-old CRABI dummy (Part 572, Subpart R)
13. Suppression tests with Newborn infant (Part 572, Subpart K)
14. Suppression tests with 3-year-old dummy (Part 572, Subpart P)
15. Suppression tests with 6-year-old dummy (Part 572, Subpart N)
16. Test of Reactivation of the passenger air bag system with an unbelted 5th percentile female human subject
17. Low risk deployment test with 12-month-old dummy (Part 572, Subpart R)
18. Low risk deployment test with 3-year-old dummy (Part 572, Subpart P)
19. Low risk deployment test with 6-year-old dummy (Part 572, Subpart N)
20. Low risk deployment test with 5th female dummy (Part 572, Subpart O)
21. Impact Tests

Frontal Oblique
- Belted 50th male dummy driver and passenger (0 to 48 kmph) (S5.1.1(a))
- Unbelted 50th male dummy driver and passenger (0 to 48 kmph) (S5.1.2(a)(1))
- Unbelted 50th male dummy driver and passenger (32 to 40 kmph) (S5.1.2(a)(1) or S5.1.2(b))

Frontal 0°
- Belted 50th male dummy driver (0 to 48 kmph) (S5.1.1.(b)(1) or S5.1.1(a))
- Belted 50th male dummy passenger (0 to 48 kmph) (S5.1.1.(b)(1) or S5.1.1(a))
- Belted 5th female dummy driver (0 to 48 kmph) (S16.1(a))
- Belted 5th female dummy passenger (0 to 48 kmph) (S16.1(a))
- Belted 50th male dummy driver and passenger (0 to 56 kmph) (S5.1.1.(b)(2))
- Unbelted 50th male dummy driver and passenger (0 to 48 kmph) (S5.1.2(a) (1))
- Unbelted 50th male dummy driver (32 to 40 kmph) (S5.1.2.(a)(2) or S5.1.2(b))
- Unbelted 50th male dummy passenger (32 to 40 kmph) (S5.1.2.(a)(2) or S5.1.2(b))
- Unbelted 5th female dummy driver (32 to 40 kmph) (S16.1(b))
- Unbelted 5th female dummy passenger (32 to 40 kmph) (S16.1(b))

Test Vehicle: 2009 Chevrolet Cobalt  
Test Program: FMVSS 208 Compliance  
NHTSA No.: C90106  
Test Dates: 2/4/09 - 3/31/09
For the crash tests, the vehicle was instrumented with 8 accelerometers. The accelerometer data from the vehicle and dummies were sampled at 10,000 samples per second and processed as specified in SAE J211/1 MAR95 and FMVSS 208, S4.13.

The dynamic tests were recorded using high-speed digital video.

The vehicle appears to meet the performance requirements to which it was tested.
### 5th Percentile Female Low Risk Deployments

#### 5th Percentile Female SN 507 Position 1 (Chin On Module) 3/9/09

<table>
<thead>
<tr>
<th>Injury Criteria</th>
<th>Max. Allowable Injury Assessment Values</th>
<th>Measured Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIC15</td>
<td>700</td>
<td>9</td>
</tr>
<tr>
<td>Peak Nij (Nte)</td>
<td>1.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>102.9</td>
</tr>
<tr>
<td>Peak Nij (Ntf)</td>
<td>1.0</td>
<td>0.3</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>39.2</td>
</tr>
<tr>
<td>Peak Nij (Nce)</td>
<td>1.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>0.9</td>
</tr>
<tr>
<td>Peak Nij (Ncf)</td>
<td>1.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>13.5</td>
</tr>
<tr>
<td>Neck Tension</td>
<td>2070 N</td>
<td>324</td>
</tr>
<tr>
<td>Neck Compression</td>
<td>2520 N</td>
<td>120</td>
</tr>
<tr>
<td>Chest g</td>
<td>60 g</td>
<td>9</td>
</tr>
<tr>
<td>Chest Displacement</td>
<td>52 mm</td>
<td>6</td>
</tr>
<tr>
<td>Left Femur</td>
<td>6805 N</td>
<td>57</td>
</tr>
<tr>
<td>Right Femur</td>
<td>6805 N</td>
<td>68</td>
</tr>
</tbody>
</table>

Second stage fire time of 100 ms; Injuries calculated on 0 ms to 225 ms

#### 5th Percentile Female SN 507 Position 2 (Chin On Rim) 3/9/09

<table>
<thead>
<tr>
<th>Injury Criteria</th>
<th>Max. Allowable Injury Assessment Values</th>
<th>Measured Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIC15</td>
<td>700</td>
<td>3</td>
</tr>
<tr>
<td>Peak Nij (Nte)</td>
<td>1.0</td>
<td>0.3</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>16.2</td>
</tr>
<tr>
<td>Peak Nij (Ntf)</td>
<td>1.0</td>
<td>0.1</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>75.9</td>
</tr>
<tr>
<td>Peak Nij (Nce)</td>
<td>1.0</td>
<td>0.1</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>164.9</td>
</tr>
<tr>
<td>Peak Nij (Ncf)</td>
<td>1.0</td>
<td>0.1</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>86.8</td>
</tr>
<tr>
<td>Neck Tension</td>
<td>2070 N</td>
<td>433</td>
</tr>
<tr>
<td>Neck Compression</td>
<td>2520 N</td>
<td>75</td>
</tr>
<tr>
<td>Chest g</td>
<td>60 g</td>
<td>16</td>
</tr>
<tr>
<td>Chest Displacement</td>
<td>52 mm</td>
<td>11</td>
</tr>
<tr>
<td>Left Femur</td>
<td>6805 N</td>
<td>23</td>
</tr>
<tr>
<td>Right Femur</td>
<td>6805 N</td>
<td>15</td>
</tr>
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</table>

Second stage fire time of 100 ms; Injuries calculated on 0 ms to 225 ms
### 3-Year-Old Low Risk Deployments

#### 3-Year-Old SN 032 Position 1 (Chest On Instrument Panel) 3/9/09

<table>
<thead>
<tr>
<th>Injury Criteria</th>
<th>Max. Allowable Injury Assessment Values</th>
<th>Measured Value</th>
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</thead>
<tbody>
<tr>
<td>HIC15</td>
<td>570</td>
<td>46</td>
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<tr>
<td>Peak Nij (Nte)</td>
<td>1.0</td>
<td>0.3</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
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<tr>
<td>Peak Nij (Ntf)</td>
<td>1.0</td>
<td>0.4</td>
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<tr>
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<td>0.2</td>
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<tr>
<td>Time (ms)</td>
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<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>12.3</td>
</tr>
<tr>
<td>Neck Tension</td>
<td>1130 N</td>
<td>317</td>
</tr>
<tr>
<td>Neck Compression</td>
<td>1380 N</td>
<td>295</td>
</tr>
<tr>
<td>Chest g</td>
<td>55 g</td>
<td>15</td>
</tr>
<tr>
<td>Chest Displacement</td>
<td>34 mm</td>
<td>3</td>
</tr>
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</table>

Second stage fire time of 40 ms; Injuries calculated on 0 ms to 100 ms

#### 3-Year-Old SN 032 Position 2 (Head On Instrument Panel) 3/9/09

<table>
<thead>
<tr>
<th>Injury Criteria</th>
<th>Max. Allowable Injury Assessment Values</th>
<th>Measured Value</th>
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</thead>
<tbody>
<tr>
<td>HIC15</td>
<td>570</td>
<td>22</td>
</tr>
<tr>
<td>Peak Nij (Nte)</td>
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<td>0.1</td>
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<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>16.4</td>
</tr>
<tr>
<td>Peak Nij (Ntf)</td>
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<tr>
<td>Peak Nij (Nce)</td>
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<td>0.6</td>
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<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>57.2</td>
</tr>
<tr>
<td>Peak Nij (Ncf)</td>
<td>1.0</td>
<td>0.1</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>8.3</td>
</tr>
<tr>
<td>Neck Tension</td>
<td>1130 N</td>
<td>44</td>
</tr>
<tr>
<td>Neck Compression</td>
<td>1380 N</td>
<td>655</td>
</tr>
<tr>
<td>Chest g</td>
<td>55 g</td>
<td>6</td>
</tr>
<tr>
<td>Chest Displacement</td>
<td>34 mm</td>
<td>0</td>
</tr>
</tbody>
</table>

Second stage fire time of 40 ms; Injuries calculated on 0 ms to 100 ms
### 6-Year-Old Low Risk Deployments

**6-Year-Old SN 155 Position 1 (Chest On Instrument Panel) 3/10/09**

<table>
<thead>
<tr>
<th>Injury Criteria</th>
<th>Max. Allowable Injury Assessment Values</th>
<th>Measured Value</th>
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<tbody>
<tr>
<td>HIC15</td>
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<td>Peak Nij (Ntf)</td>
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<td>0.3</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>8.8</td>
</tr>
<tr>
<td>Peak Nij (Nce)</td>
<td>1.0</td>
<td>0.3</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>49.2</td>
</tr>
<tr>
<td>Peak Nij (Ncf)</td>
<td>1.0</td>
<td>0.1</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>20.5</td>
</tr>
<tr>
<td>Neck Tension</td>
<td>1490 N</td>
<td>721</td>
</tr>
<tr>
<td>Neck Compression</td>
<td>1820 N</td>
<td>240</td>
</tr>
<tr>
<td>Chest g</td>
<td>60 g</td>
<td>8</td>
</tr>
<tr>
<td>Chest Displacement</td>
<td>40 mm</td>
<td>1</td>
</tr>
</tbody>
</table>

Second stage fire time of 40 ms; Injuries calculated on 0 ms to 100 ms

### 6-Year-Old SN 155 Position 2 (Head On Instrument Panel) 3/10/09

<table>
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<th>Injury Criteria</th>
<th>Max. Allowable Injury Assessment Values</th>
<th>Measured Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIC15</td>
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<td>25</td>
</tr>
<tr>
<td>Peak Nij (Nte)</td>
<td>1.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>16.9</td>
</tr>
<tr>
<td>Peak Nij (Ntf)</td>
<td>1.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>0.1</td>
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<tr>
<td>Peak Nij (Nce)</td>
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<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>55.1</td>
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<tr>
<td>Peak Nij (Ncf)</td>
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<tr>
<td>Time (ms)</td>
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</tr>
<tr>
<td>Neck Tension</td>
<td>1490 N</td>
<td>188</td>
</tr>
<tr>
<td>Neck Compression</td>
<td>1820 N</td>
<td>914</td>
</tr>
<tr>
<td>Chest g</td>
<td>60 g</td>
<td>7</td>
</tr>
<tr>
<td>Chest Displacement</td>
<td>40 mm</td>
<td>0</td>
</tr>
</tbody>
</table>

Second stage fire time of 40 ms; Injuries calculated on 0 ms to 100 ms
SECTION 3
INJURY RESULT SUMMARY FOR FMVSS 208 TESTS

Test Vehicle: 2009 Chevrolet Cobalt  
Test Program: FMVSS 208 Compliance  
NHTSA No.: C90106  
Test Date: 3/31/09

40 kmph Frontal Crash

Impact Angle: Zero degrees

Belted Dummies: Yes
No

Speed Range: 0 to 40 kmph
32 to 40 kmph
0 to 48 kmph
0 to 56 kmph

Test Speed: 37.3 kmph  
Test Weight: 1423.8 kg

Driver Dummy: 5th female
50th male

Passenger Dummy: 5th female
50th male

5th Percentile Female Frontal Crash Test
Vehicles certified to S16.1(a)(1), S16.1(a)(2), S16.1(b), or S18.1

<table>
<thead>
<tr>
<th>Injury Criteria</th>
<th>Max. Allowable Injury Assessment Values</th>
<th>Driver</th>
<th>Passenger</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIC15</td>
<td>700</td>
<td>111</td>
<td>186</td>
</tr>
<tr>
<td>N_{le}</td>
<td>1.0</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>N_{lf}</td>
<td>1.0</td>
<td>0.4</td>
<td>0.2</td>
</tr>
<tr>
<td>N_{ce}</td>
<td>1.0</td>
<td>0.1</td>
<td>0.3</td>
</tr>
<tr>
<td>N_{cf}</td>
<td>1.0</td>
<td>0.1</td>
<td>0.7</td>
</tr>
<tr>
<td>Neck Tension</td>
<td>2620 N</td>
<td>977</td>
<td>307</td>
</tr>
<tr>
<td>Neck Compression</td>
<td>2520 N</td>
<td>166</td>
<td>926</td>
</tr>
<tr>
<td>Chest g</td>
<td>60 g</td>
<td>39</td>
<td>32</td>
</tr>
<tr>
<td>Chest Displacement</td>
<td>52 mm</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Left Femur</td>
<td>6805 N</td>
<td>4965</td>
<td>4137</td>
</tr>
<tr>
<td>Right Femur</td>
<td>6805 N</td>
<td>3459</td>
<td>3630</td>
</tr>
</tbody>
</table>
SECTION 4
DISCUSSION OF TESTS

Test Vehicle: 2009 Chevrolet Cobalt  NHTSA No.: C90106
Test Program: FMVSS 208 Compliance  Test Dates: 2/4/09 - 3/31/09

A blanket and visor were not used in the suppression testing because they did not affect the sensing system used on the vehicle.

The 3-year-old Position 1 Low Risk Deployment test conducted on 3/9/09 broke the windshield. The 3-year-old Position 2 test conducted on 3/9/09 and 6-year-old Position 2 test conducted on 3/10/09 were run with this broken windshield. The windshield was replaced on 3/10/09 and the subsequent 6-year-old Position 1 test run on 3/10/09 was conducted with an unbroken windshield. The windshield was replaced with a new OEM windshield for the frontal crash impact.

The frontal impact crash test was conducted at 23 mph at the direction of the COTR.

There was no valid data after 100 msec on the Top of Engine (X) accelerometer during the frontal impact crash test.

There was no valid data after 20 msec on the Trunk (Z) accelerometer during the frontal impact crash test.
<table>
<thead>
<tr>
<th>Test Vehicle:</th>
<th>2009 Chevrolet Cobalt</th>
<th>NHTSA No.:</th>
<th>C90106</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Program:</td>
<td>FMVSS 208 Compliance</td>
<td>Test Dates:</td>
<td>2/4/09 - 3/31/09</td>
</tr>
</tbody>
</table>
DATA SHEET 1
COTR VEHICLE WORK ORDER

Test Vehicle: 2009 Chevrolet Cobalt
Test Program: FMVSS 208 Compliance
NHTSA No.: C90106
Test Dates: 2/4/09 - 3/31/09

COTR Signature: Brian Smith

Test to be performed for this vehicle are checked below:

1. Rear Seating Position Seat Belts
2. Air Bag Labels (S4.5.1)
3. Readiness Indicator (S4.5.2)
4. Passenger Air Bag Manual Cut-off Device (S4.5.4)
5. Lap Belt Lockability (S7.1.1.5)
6. Seat Belt Warning System (S7.3)
7. Seat Belt Contact Force (S7.4.3)
8. Seat Belt Latch Plate Access (S7.4.4)
9. Seat Belt Retraction (S7.4.5)
10. Seat Belt Guides and Hardware (S7.4.6)
11. Air bag suppression telltale (S19.2.2)
12. Suppression tests with 12-month-old CRABI dummy (Part 572, Subpart R) using the following indicated child restraints (mid-height seat position):
   Section B – Rear Facing (unbelted and belted rear facing, unbelted forward facing)
   - Britax Handle with Care 191
   - Century Assura 4553
   - Century Smart Fit 4543
   - Cosco Arriva 02727
   - Cosco Opus 35 02603
   - Evenflo Discovery Adjust Right 212
   - Evenflo First Choice 204
   - Graco Infant 8457
   - Evenflo Horizon V 425
   - Evenflo Medalion 254

13. Suppression tests with newborn infant (Part 572, Subpart K) using the following indicated child restraints (mid-height seat position):
   Section A – Car Bed (Belted)
   - Cosco Dream Ride 02-719

14. Suppression tests with 3-year-old dummy (Part 572, Subpart P) using the following indicated child restraints where a child restraint is required (mid-height seat position):
### Section C – Convertible (Belted forward-facing)

<table>
<thead>
<tr>
<th>Child Restraint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Britax Roundabout 161</td>
</tr>
<tr>
<td>Century Encore 4612</td>
</tr>
<tr>
<td>Century STE 1000 4416</td>
</tr>
<tr>
<td>Cosco Olympian 02803</td>
</tr>
<tr>
<td>Cosco Touriva 02519</td>
</tr>
<tr>
<td>Evenflo Horizon V 425</td>
</tr>
<tr>
<td>Evenflo Medallion 254</td>
</tr>
</tbody>
</table>

### Section D – Toddler/Belt Positioning Booster (Belted)

<table>
<thead>
<tr>
<th>Child Restraint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Britax Roadster 9004</td>
</tr>
<tr>
<td>Century Next Step 4920</td>
</tr>
<tr>
<td>Cosco High Back Booster 02-442</td>
</tr>
<tr>
<td>Evenflo Right Fit 245</td>
</tr>
</tbody>
</table>

### 15. Suppression tests with representative 3-year-old child using the following indicated child restraints where a child restraint is required (mid-height position). (Appendix H, Data Sheet 19H and 20H)

### Section C – Convertible (Belted forward-facing)

<table>
<thead>
<tr>
<th>Child Restraint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Britax Roundabout 161</td>
</tr>
<tr>
<td>Century Encore 4612</td>
</tr>
<tr>
<td>Century STE 1000 4416</td>
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<tr>
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<td>Cosco Touriva 02519</td>
</tr>
<tr>
<td>Evenflo Horizon V 425</td>
</tr>
<tr>
<td>Evenflo Medallion 254</td>
</tr>
</tbody>
</table>

### Section D – Toddler/Belt Positioning Booster (Belted)

<table>
<thead>
<tr>
<th>Child Restraint</th>
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<tbody>
<tr>
<td>Britax Roadster 9004</td>
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<tr>
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</tr>
<tr>
<td>Cosco High Back Booster 02-442</td>
</tr>
<tr>
<td>Evenflo Right Fit 245</td>
</tr>
</tbody>
</table>

### 16. Suppression tests with 3-year-old dummy (Part 572, Subpart P) in the following positions (mid-height seat position):

<table>
<thead>
<tr>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sitting on seat with back against seat back (S22.2.2.1)</td>
</tr>
<tr>
<td>Sitting on seat with back against reclined seat back (S22.2.2.2)</td>
</tr>
<tr>
<td>Sitting on seat with back not against seat back (S22.2.2.3)</td>
</tr>
<tr>
<td>Sitting on seat edge, spine vertical, hands by the child’s side (S22.2.2.4)</td>
</tr>
<tr>
<td>Standing on seat, facing forward (S22.2.2.5)</td>
</tr>
<tr>
<td>Kneeling on seat facing forward (S22.2.2.6)</td>
</tr>
<tr>
<td>Kneeling on seat facing rearward (S22.2.2.7)</td>
</tr>
<tr>
<td>Lying on seat (S22.2.2.8)</td>
</tr>
</tbody>
</table>
17. Suppression tests with representative 3-year-old child in the following positions (mid-height seat position):

- Sitting on seat with back against seat back (S22.2.2.1)
  - Full Rearward  Mid Position  Full Forward
- Sitting on seat with back against reclined seat back (S22.2.2.2)
  - Full Rearward  Mid Position  Full Forward
- Sitting on seat with back not against seat back (S22.2.2.3)
  - Full Rearward  Mid Position  Full Forward
- Sitting on seat edge, spine vertical, hands by the child’s side (S22.2.2.4)
  - Full Rearward  Mid Position  Full Forward
- Standing on seat, facing forward (S22.2.2.5)
  - Full Rearward  Mid Position  Full Forward
- Kneeling on seat facing forward (S22.2.2.6)
  - Full Rearward  Mid Position  Full Forward
- Kneeling on seat facing rearward (S22.2.2.7)
  - Full Rearward  Mid Position  Full Forward
- Lying on seat (S22.2.2.8)
  - Full Rearward  Mid Position  Full Forward

18. Suppression tests with 6-year-old dummy (Part 572, Subpart N) using the following indicated child restraints where a child restraint is required (mid-height seat position):

Section D

- Britax Roadster 9004
  - Full Rearward  Mid Position  Full Forward
- Century Next Step 4920
  - Full Rearward  Mid Position  Full Forward
- Cosco High Back Booster 02-442
  - Full Rearward  Mid Position  Full Forward
- Evenflo Right Fit 245
  - Full Rearward  Mid Position  Full Forward

19. Suppression tests with representative 6-year-old child using the following indicated child restraints where a child restraint is required (mid-height seat position):

Section D

- Britax Roadster 9004
  - Full Rearward  Mid Position  Full Forward
- Century Next Step 4920
  - Full Rearward  Mid Position  Full Forward
- Cosco High Back Booster 02-442
  - Full Rearward  Mid Position  Full Forward
- Evenflo Right Fit 245
  - Full Rearward  Mid Position  Full Forward

20. Suppression tests with 6-year-old dummy (Part 572, Subpart N) in the following positions (mid-height seat position):

- Sitting on seat with back against seat back (S22.2.2.1)
  - Full Rearward  Mid Position  Full Forward
- Sitting on seat with back against reclined seat back (S22.2.2.2)
  - Full Rearward  Mid Position  Full Forward
- Sitting on seat edge, spine vertical, hands by the child’s side (S22.2.2.4)
  - Full Rearward  Mid Position  Full Forward
- Sitting back in the seat and leaning on the right front passenger door (S24.2.3)
  - Full Rearward  Mid Position  Full Forward

21. Suppression tests with representative 6-year-old child in the following positions (mid-height seat position):

- Sitting on seat with back against seat back (S22.2.2.1)
  - Full Rearward  Mid Position  Full Forward
- Sitting on seat with back against reclined seat back (S22.2.2.2)
  - Full Rearward  Mid Position  Full Forward
- Sitting on seat edge, spine vertical, hands by the child’s side (S22.2.2.4)
  - Full Rearward  Mid Position  Full Forward
- Sitting back in the seat and leaning on the right front passenger door (S24.2.3)
22. Test of Reactivation of the Passenger Air Bag System with an Unbelted 5th percentile female dummy (S20.3, 22.3, S24.3) (mid-height seat position). Perform this test after the following suppression tests:

23. Test of Reactivation of the Passenger Air Bag System with a representative 5th percentile female (S20.3, 22.3, S24.3) (mid-height seat position). Perform this test after the following suppression tests: After each restraint.

24. Low risk deployment test with 12-month-old dummy (Part 572, Subpart R) using the following indicated child restraints (full forward, mid-height seat position)(S20.4):

Section B
- Britax Handle with Care 191
- Century Assura 4553
- Century Smart Fit 4543
- Cosco Arriva 02727
- Evenflo Discovery Adjust Right 212
- Evenflo First Choice 204
- Graco Infant 8457

Section C
- Britax Roundabout 161
- Century Encore 4612
- Century STE 1000 4416
- Cosco Olympian 02803
- Cosco Touriva 02519
- Evenflo Horizon V 425
- Evenflo Medallion 254

25. Low risk deployment test with 3-year-old dummy (Part 572, Subpart P) in the following positions:
   - Position 1 (rearmost, lowest seat position)
   - Position 2 (mid-height seat position)

26. Low risk deployment test with 6-year-old dummy (Part 572, Subpart N) in the following positions:
   - Position 1 (rearmost, lowest seat position)
   - Position 2 (mid-height seat position)

27. Low risk deployment test with 5th female dummy (Part 572, Subpart O) in the following positions:
   - Position 1 (mid-height seat position)
   - Position 2 (mid-height seat position)

28. Impact Tests
   - Frontal Oblique
     - Belted 50th male dummy driver and passenger (0 to 48 kmph) (S5.1.1(a))
     - Unbelted 50th male dummy driver and passenger (0 to 48 kmph) (S5.1.2(a)(1))
     - Unbelted 50th male dummy driver and passenger (32 to 40 kmph) (S5.1.2(a)(2) or S5.1.2(b))
Frontal 0° - Test Speed: 37.3 kmph

- Belted 50th male dummy driver (0 to 48 kmph) (S5.1.1.(b)(1) or S5.1.1(a))
- Belted 50th male dummy passenger (0 to 48 kmph) (S5.1.1.(b)(1) or S5.1.1(a))
- Belted 5th female dummy driver (0 to 48 kmph) (S16.1(a)(1))
- Belted 5th female dummy passenger (0 to 48 kmph) (S16.1(a)(1))
- Belted 5th female dummy driver and passenger (0 to 56 kmph) (S16.1(a)(2))
- Belted 50th male dummy driver and passenger (0 to 56 kmph) (S5.1.1.(b)(2))
- Unbelted 50th male dummy driver and passenger (0 to 48 kmph) (S5.1.2(a) (1))
- Unbelted 50th male dummy driver (32 to 40 kmph) (S5.1.2.(a)(2) or S5.1.2(b))
- Unbelted 50th male dummy passenger (32 to 40 kmph) (S5.1.2.(a)(2) or S5.1.2(b))
- Unbelted 5th female dummy driver (32 to 40 kmph) (S16.1(b))
- Unbelted 5th female dummy passenger (32 to 40 kmph) (S16.1(b))
- 40% Offset 0° Belted 5th female dummy driver and passenger (0 to 40 kmph) (S18.1)

Test Speed:

- 29. FMVSS 204 Indicant Test
- 30. FMVSS 212 Test
- 31. FMVSS 219 Indicant Test
- 32. FMVSS 301 Frontal Test
DATA SHEET 2
REPORT OF VEHICLE CONDITION

Test Vehicle: 2009 Chevrolet Cobalt  
Test Program: FMVSS 208 Compliance
NHTSA No.: C90106 
Test Dates: 2/4/09-3/31/09

CONTRACT NO.: DTNH22-08-D-00086  
FROM (Lab and rep name): MGA Research Corporation
TO: NHTSA, OVSC, NVS-220

PURPOSE: (X) Initial Receipt (   ) Received via Transfer (X) Present vehicle condition

MODEL YEAR/MAKE/MODEL/BODY STYLE: 2009 Chevrolet Cobalt 4 Door
MANUFACTURE DATE: 08/08
NHTSA NO. C90106 
BODY COLOR: Black
VIN: 1G1AK58H897127727
GVWR: 1698 kg (3742 lbs)
GAWR (Fr): 873 kg (1924 lbs)
GAWR (Rr): 825 kg (1818 lbs)

ODOMETER READINGS: ARRIVAL (miles): 136  
COMPLETION (miles): 144
DATE: 1/27/09  
DATE: 3/31/09
PURCHASE PRICE: ($) 13,464
DEALER’S NAME: Boucher Fleet Group, 1421 E. Moreland Blvd., Waukesha, WI 53186

A. All options listed on window sticker are present on the test vehicle:  
   _X Yes  ___No
B. Tires and wheel rims are new and the same as listed:  _X Yes  ___No
C. There are no dents or other interior or exterior flaws:  _X Yes  ___No
D. The vehicle has been properly prepared and is in running condition:  _X Yes  ___No
E. Keyless remote is available and working:  _X Yes  ___No
F. The glove box contains an owner's manual, warranty document, consumer information, 
   and extra set of keys:  _X Yes  ___No
G. Proper fuel filler cap is supplied on the test vehicle:  _X Yes  ___No
H. Using permanent marker, identify vehicle with NHTSA number and FMVSS test type(s) 
   on roof line above driver door or for school buses, place a placard with NHTSA number 
   inside the windshield and to the exterior front and rear side of bus:  _X Yes  ___No
I. Place vehicle in storage area:  _X Yes  ___No
J. Inspect the vehicle’s interior and exterior, including all windows, seats, doors, etc. to 
   confirm that each system is complete and functional per the manufacturer’s 
   specifications. Any damage, misadjustment, or other unusual condition that could 
   influence the test program or test results shall be recorded. Report any abnormal 
   condition to the NHTSA COTR before beginning any test:  _X Vehicle OK  ___Conditions reported below in comment section

Identify the letter above to which any of the following comments apply.
Comments:___________________________________________________________________
____________________________________________________________________________
REPORT OF VEHICLE CONDITION AT THE COMPLETION OF TESTING

LIST OF FMVSS TESTS PERFORMED BY THIS LAB: FMVSS 208, 212, 219, 301

VEHICLE: 2009 Chevrolet Cobalt  NHTSA NO.: C90106

REMARKS:

Equipment that is no longer on the test vehicle as noted on previous page:
Spare tire, jack and tools, and trunk interior

Explanation for equipment removal:
Components removed for instrumentation installation and to meet target weight.

Test Vehicle Condition:
23 mph frontal impact damage- front suspension & structure damaged, hood & front quarter panels damaged, radiator damaged, air bags & pretensioners deployed, Stoddard in fuel system

RECORDED BY: Jeff Lewandowski DATE: 4/7/2009
APPROVED BY: David Winkelbauer DATE: 4/7/2009

RELEASE OF TEST VEHICLE

The vehicle described above is released from MGA to be delivered to:

Date: Time: Odometer:
Lab Rep’s Signature: Title:
Carrier/Customer Rep: Date:
DATA SHEET 3
CERTIFICATION LABEL AND TIRE PLACARD INFORMATION

Test Vehicle: 2009 Chevrolet Cobalt  
Test Program: FMVSS 208 Compliance  
Test Technician: Jamie Aide  
NHTSA No.: C90106  
Test Date: 3/31/09

<table>
<thead>
<tr>
<th>Manufacturer:</th>
<th>GENERAL MOTORS CORP.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Manufacture:</td>
<td>08/08</td>
</tr>
<tr>
<td>VIN:</td>
<td>1G1AK58H897127727</td>
</tr>
<tr>
<td>Vehicle Certified As (Pass. Car/MPV/Truck/Bus):</td>
<td>Passenger Car</td>
</tr>
<tr>
<td>Front Axle GVWR:</td>
<td>873 kg (1924 lbs)</td>
</tr>
<tr>
<td>Rear Axle GVWR:</td>
<td>825 kg (1818 lbs)</td>
</tr>
<tr>
<td>Total GVWR:</td>
<td>1698 kg (3742 lbs)</td>
</tr>
</tbody>
</table>

Tire Placard for Motor Vehicles with GVWR of 10,000 lb or Less and Passenger Cars (571.110)

| Vehicle Capacity Weight: | 404 kg (891 lbs) |
| Designed Seating Capacity Front: | 2 |
| Designed Seating Capacity Rear: | 3 |
| Total Designed Seating Capacity: | 5 |
| Recommended Cold Tire Inflation Pressure Front: | 230 kpa (33 psi) |
| Recommended Cold Tire Inflation Pressure Rear: | 230 kpa (33 psi) |
| Recommended Tire Size: | P195/60R15 |
| Tire Size on Vehicle: | P195/60R15 |

Signature: Jamie Aide  
Date: 3/31/09
DATA SHEET 4
REAR SEATING POSITION SEAT BELTS

Test Vehicle: 2009 Chevrolet Cobalt
Test Program: FMVSS 208 Compliance
Test Technician: Alyssa Paul

NHTSA No.: C90106
Test Date: 2/4/09

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Do all rear seating positions have Type 2 seat belts?

If NO, describe the seat belt installed, the seat location, and any other information about the seat that would explain why a Type 2 seat belt was not installed.

REMARKS:

Signature: __________________________
Date: 2/4/09
### DATA SHEET 5
### AIR BAG LABELS (S4.5.1)

<table>
<thead>
<tr>
<th>Test Vehicle:</th>
<th>2009 Chevrolet Cobalt</th>
<th>NHTSA No.:</th>
<th>C90106</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Program:</td>
<td>FMVSS 208 Compliance</td>
<td>Test Date:</td>
<td>2/4/09</td>
</tr>
<tr>
<td>Test Technician:</td>
<td>Chris Novak</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Air Bag Maintenance Label and Owner’s Manual Instructions: (S4.5.1(a))
   1.1 Does the manufacturer recommend periodic maintenance or replacement of the air bag?
      - Yes (Go to 1.2)
      - No (Go to 2)

2. Does the vehicle have a label specifying air bag maintenance or replacement?
   - Yes – Pass
   - No – Fail

3. Does the label contain one of the following?
   - Yes – Pass
   - No – Fail

   Check applicable schedule:
   - Schedule on label specifies month and year (Record date_______)
   - Schedule on label specifies vehicle mileage (Record mileage_______)
   - Schedule on label specifies interval measured from date on certification label (Record interval_______)

4. Is the label permanently affixed within the passenger compartment such that it cannot be removed without destroying or defacing the label or vehicle part? (3/19/01 legal interpretation to Todd Mitchell)
   - Yes – Pass
   - No – Fail

5. Is the label lettered in English?
   - Yes – Pass
   - No – Fail

6. Is the label in block capitals and numerals?
   - Yes – Pass
   - No – Fail

7. Are the letters and numerals at least 3/32 inches high?
   - Yes – Pass
   - No – Fail

8. Does the owner’s manual set forth the recommended schedule for maintenance or replacement?
   - Yes – Pass
   - No – Fail

2. Does the owner’s manual: (S4.5.1(f))
   2.1 Include a description of the vehicle’s air bag system in an easily understandable format?
      - Yes – Pass
      - No – Fail

   2.2 Include a statement that the vehicle is equipped with an air bag and a lap/shoulder belt at the front outboard seating position?
      - Yes – Pass
      - No – Fail

   2.3 Include a statement that the air bag is a supplemental restraint at the front outboard seating position?
      - Yes – Pass
      - No – Fail
2.4 Emphasize that all occupants, including the driver, should always wear their seat belts whether or not an air bag is also provided at their seating positions to minimize the risk of severe injury or death in the event of a crash?

- Yes – Pass
- No – Fail

2.5 Provide any necessary precautions regarding the proper positioning of occupants, including children, at seating positions equipped with air bags to ensure maximum safety protection for those occupants?

- Yes – Pass
- No – Fail

2.6 Explain that no objects should be placed over or near the air bag on the steering wheel or on the instrument panel, because any such objects could cause harm if the vehicle is in a crash severe enough to cause the air bag to inflate?

- Yes – Pass
- No – Fail

2.7 Is the vehicle certified to meet the requirements of S14.5, S15, S17, S19, S21, S23, and S25? (Obtain answer to this question from the COTR) (S4.5.1(f)(2))

- Yes – (Go to 2.7.1)
- No – (Go to 3.)

2.7.1 Explain the proper functioning of the advanced air bag system? (S4.5.1(f)(2))

- Yes – Pass
- No – Fail

2.7.2 Provide a summary of the actions that may affect the proper functioning of the system? (S4.5.1(f)(2))

- Yes – Pass
- No – Fail

2.7.3 Present and explain the main components of the advanced passenger air bag system? (S4.5.1(f)(2)(i))

- Yes – Pass
- No – Fail

2.7.4 Explain how the components function together as part of the advanced passenger air bag system? (S4.5.1(f)(2)(ii))

- Yes – Pass
- No – Fail

2.7.5 Contain the basic requirements for proper operation, including an explanation of the actions that may affect the proper functioning of the system? (S4.5.1(f)(2)(iii))

- Yes – Pass
- No – Fail

2.7.6 Is the vehicle certified to the requirements of S19.2, S21.2, or 23.2 (automatic suppression)?

- Yes, continue with 2.7.6
- No, go to 2.7.7

2.7.6.1 Contain a complete description of the passenger air bag suppression system installed in the vehicle, including a discussion of any suppression zone? (S4.5.1(f)(2)(iv))

- Yes – Pass
- No – Fail

2.7.6.2 Discuss the telltale light, specifying its location in the vehicle and explaining when the light is illuminated?

- Yes – Pass
- No – Fail
2.7.7 Explain the interaction of the advanced passenger air bag system with other vehicle components, such as seat belts, seats or other components? (S4.5.1(f)(2)(v))

Yes – Pass  No – Fail

2.7.8 Summarize the expected outcomes when child restraint systems, children and small teenagers or adults are both properly and improperly positioned in the passenger seat, including cautionary advice against improper placement of child restraint systems? (S4.5.1(f)(2)(vi))

Yes – Pass  No – Fail

2.7.9 Provide information on how to contact the vehicle manufacturer concerning modifications for persons with disabilities that may affect the advanced air bag system? (S4.5.1(f)(2)(vii))

Yes – Pass  No – Fail

3. Sun Visor Air Bag Warning Label (S4.5.1(b)): Vehicles certified to meet the requirements of S19, S21 and S23. (S4.5.1(b)(3))

3.1 Is the label permanently affixed (including permanent marking on the visor material or molding into the visor material) to either side of the sun visor at each front outboard seating position such that it cannot be removed without destroying or defacing the label or the sun visor? (S4.5.1(b)(3)) (3/19/01 legal interpretation to Todd Mitchell)

Driver Side, Yes – Pass  No – Fail

Passenger Side, Yes – Pass  No – Fail
3.2 **Does the label conform in content to the label shown in Figure 11 at each front outboard seating position?** (S4.5.1(b)(2)) *(Vehicles without back seats or the back seat is too small to accommodate a rear-facing child restraint may omit the statement: “Never put a rear-facing child seat in the front.” (S4.5.1(b)(3)(v)))*

<table>
<thead>
<tr>
<th>Side</th>
<th>Conformity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver Side</td>
<td>Yes – Pass</td>
</tr>
<tr>
<td>Driver Side</td>
<td>No – Fail</td>
</tr>
<tr>
<td>Passenger Side</td>
<td>Yes – Pass</td>
</tr>
<tr>
<td>Passenger Side</td>
<td>No – Fail</td>
</tr>
</tbody>
</table>

![Figure 11. Sun Visor Label Visible when Visor is in Down Position.](image)

3.3 **Is the label heading area yellow with the word “WARNING” and the alert symbol in black?** (S4.5.1(b)(3)(i))

<table>
<thead>
<tr>
<th>Side</th>
<th>Conformity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver Side</td>
<td>Yes – Pass</td>
</tr>
<tr>
<td>Driver Side</td>
<td>No – Fail</td>
</tr>
<tr>
<td>Passenger Side</td>
<td>Yes – Pass</td>
</tr>
<tr>
<td>Passenger Side</td>
<td>No – Fail</td>
</tr>
</tbody>
</table>

![Figure 6b. Sun Visor Label Visible When Visor is in Down Position.](image)

3.4 **Is the message area white with black text?** (S4.5.1(b)(3)(ii))

<table>
<thead>
<tr>
<th>Side</th>
<th>Conformity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver Side</td>
<td>Yes – Pass</td>
</tr>
<tr>
<td>Driver Side</td>
<td>No – Fail</td>
</tr>
<tr>
<td>Passenger Side</td>
<td>Yes – Pass</td>
</tr>
<tr>
<td>Passenger Side</td>
<td>No – Fail</td>
</tr>
</tbody>
</table>

![Diagram showing label design and layout](image)
3.5 Is the message area at least 30 cm²? (S4.5.1(b)(3)(ii))

The message area consists of the total label area minus the yellow heading area and the pictogram. The pictogram is enclosed on the left side and bottom by the edge of the label. The top edge of the pictogram area is defined by a horizontal line midway between the uppermost edge of the pictogram and the lowermost edge of the text. The right side of the pictogram is defined by a vertical line midway between the rightmost edge of the pictogram and the left most edge of the text, including any bullets. (See 5/6/03 interpretation to Gerald Plante on behalf of Subaru)

Driver Side: Length 90 mm, Width 37 mm
Passenger Side: Length 90 mm, Width 37 mm
Driver actual message area 33.3 cm²
Passenger actual message area 33.3 cm²
X Driver Side, Yes – Pass
X Driver Side, No – Fail
X Passenger Side, Yes – Pass
X Passenger Side, No – Fail

3.6 Is the pictogram black on a white background? (S4.5.1(b)(3)(iii))

X Driver Side, Yes – Pass
X Driver Side, No – Fail
X Passenger Side, Yes – Pass
X Passenger Side, No – Fail

3.7 Is the pictogram at least 30 mm in length? (S4.5.1(b)(3)(iii))

Driver side: Length: 32 mm
Passenger side:Length: 32 mm
X Driver Side, Yes – Pass
X Driver Side, No – Fail
X Passenger Side, Yes – Pass
X Passenger Side, No – Fail

3.8 Is the same side of the sun visor that contains the air bag warning label free of other information with the exception of the air bag maintenance label and/or the rollover-warning label? (S4.5.1(b)(5)(i))

X Driver Side, Yes – Pass
X Driver Side, No – Fail
X Passenger Side, Yes – Pass
X Passenger Side, No – Fail

3.9 Is the sun visor free of other information about air bags or the need to wear seat belts with the exception of the air bag alert label and/or the rollover-warning label? (S4.5.1(b)(5)(ii))

X Driver Side, Yes – Pass
X Driver Side, No – Fail
X Passenger Side, Yes – Pass
X Passenger Side, No – Fail

3.10 Does the driver side visor contain a rollover-warning label on the same side of the visor as the air bag warning label?

__ Yes (go to 3.10.1)
X No (go to 4., skipping 3.10.1 through 3.10.3)
3.10.1 Are both the rollover-warning label and the air bag warning label surrounded by a continuous solid-lined border?

___ Yes (go to 3.10.2 and skip 3.10.3)
___ No (go to 3.10.3 and skip 3.10.2)

3.10.2 Is the shortest distance from the border of the rollover label to the border of the air bag warning label at least 1 cm? (575.105 (d)(1)(iv)(B))

____________ actual distance
__Yes-Pass __No-FAIL

3.10.3 Is the shortest distance from any of the lettering or graphics on the rollover-warning label to any of the lettering or graphics of the air bag warning label at least 3 cm? (575.105 (d)(1)(iv)(A))

____________ actual distance
__Yes-Pass __No-FAIL

4. Air Bag Alert Label (S4.5.1(c) (A “Rollover Warning Label” or “Rollover Alert Label” may be on the same side of the driver’s sun visor as the “Air Bag Alert Label.” 575.105(d))

4.1 Is the Sun Visor Warning Label visible when the sun visor is in the stowed position?

X If yes for driver and passenger, go to 5.

X Driver Side, Yes
   Driver Side, No
X Passenger Side, Yes
   Passenger Side, No

4.2 Is the air bag alert label permanently affixed (including permanent marking on the visor material or molding into the visor material) to the sun visor at each front outboard seating position such that it cannot be removed without destroying or defacing the label or the sun visor? (S4.5.1(c)) (3/19/01 legal interpretation to Todd Mitchell)

___ Driver Side, Yes – Pass
___ Driver Side, No – Fail
___ Passenger Side, Yes – Pass
___ Passenger Side, No – Fail

4.3 Is the air bag alert label visible when the visor is in the stowed position? (S4.5.1(c))

___ Driver Side, Yes – Pass
___ Driver Side, No – Fail
___ Passenger Side, Yes – Pass
___ Passenger Side, No – Fail
4.4 Does the label conform in content to the label shown in Figure 6C? (S4.5.1(c))

4.5 Is the message area black with yellow text? (S4.5.1(c)(1))

4.6 Is the message area at least 20 cm²? (S4.5.1(c)(1)) The message area consists of the black part of the label.

4.7 Is the pictogram black with a red circle and slash on a white background? (S4.5.1(c)(2))

4.8 Is the pictogram at least 20 mm in diameter? (S4.5.1(c)(2))
5. Label on the Dashboard: Vehicles certified to meet the requirements of S19, S21 and S23?

5.1 Does the vehicle have a label on the dash or steering wheel hub? (S4.5.1(e)(3))

- Yes – Pass
- No – Fail

5.2 Is the label clearly visible from all front seating positions? (S4.5.1(e)(3))

- Yes – Pass
- No – Fail

5.3 Does the label conform in content to the label shown in Figure 12? (S4.5.1(e)(3))

Vehicles without back seats may omit the statement: “The back seat is the safest place for children.” Vehicles without back seats or too small to accommodate a rear-facing child restraint consistent with S4.5.4.1 as determined in DATA SHEET 7 may omit the statement “Never put a rear-facing child seat in the front.” (S4.5.1(e)(3)(iii))

- Yes – Pass
- No – Fail

5.4 Is the heading area yellow with black text? (S4.5.1(e)(3)(i))

- Yes – Pass
- No – Fail

5.5 Is the message white with black text? (S4.5.1(e)(3)(ii))

- Yes – Pass
- No – Fail

5.6 Is the message area at least 30 cm²? (S4.5.1(e)(3)(ii)) The message area consists of the total label area minus the yellow heading area. (See 5/6/03 interpretation to Gerald Plante on behalf of Subaru)

Length 104 mm, Width 47 mm
Actual message area 48.9 cm²

- Yes – Pass
- No – Fail

I certify that I have read and performed each instruction.

Signature: __________________________

Date: 2/4/09
DATA SHEET 6  
FMVSS 208 READINESS INDICATOR (S4.5.2)

Test Vehicle: 2009 Chevrolet Cobalt  
Test Program: FMVSS 208 Compliance  
Test Technician: Chris Novak  
NHTSA No.: C90106  
Test Date: 2/4/09

An occupant restraint system that deploys in the event of a crash shall have a monitoring system with a readiness indicator. A totally mechanical system is exempt from this requirement. (11/8/94 legal interpretation to Lawrence F. Hennegerger on behalf of Breed)

1. Is the system totally mechanical? (If Yes, this Data Sheet is complete).
   - Yes  
   - No

2. Describe the location of the readiness indicator: Center of gauge cluster

3. Is the readiness indicator clearly visible to the driver?
   - Yes – Pass  
   - No - Fail

4. Is a list of the elements in the occupant restraint system, being monitored by the readiness indicator, provided on a label or in the owner’s manual?
   - Yes – Pass  
   - No - Fail

5. Does the vehicle have an on-off switch for the passenger air bag?
   - If Yes (go to 6)  
   - If No (this form is complete)

6. Is the air bag readiness indicator off when the passenger air bag switch is in the off position?
   - Yes – Pass  
   - No - Fail

REMARKS:

I certify that I have read and performed each instruction.

Signature:  
Date: 2/4/09
### DATA SHEET 7
**PASSENGER AIR BAG MANUAL CUT-OFF DEVICE (S4.5.4)**

<table>
<thead>
<tr>
<th>Test Vehicle:</th>
<th>2009 Chevrolet Cobalt</th>
<th>NHTSA No.:</th>
<th>C90106</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Program:</td>
<td>FMVSS 208 Compliance</td>
<td>Test Date:</td>
<td>2/4/09</td>
</tr>
<tr>
<td>Test Technician:</td>
<td>Chris Novak</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Is the vehicle equipped with an on-off switch that deactivates the air bag installed at the right front outboard seating position?
   - [ ] Yes, go to 2
   - [X] No, this sheet is complete

2. Does the vehicle have any forward-facing rear designated seating positions? (S4.5.4.1(a))
   - [ ] Yes, go to 3
   - [ ] No, go to 4

3. Verification there is room for a child restraint in the rear seat behind the **driver’s seat**. (S4.5.4.1(b))
   - 3.1 Using all the controls that affect the fore-aft movement of the seat, move the seat to the rearmost position. Mark this position.
     - N/A – the seat does not have fore-aft adjustment
   - 3.2 Using all the controls that affect the fore-aft movement of the seat, move the seat to the foremost position. Mark this position.
     - N/A – the seat does not have fore-aft adjustment
   - 3.3 Move the seat to the middle of the foremost and rearmost positions. (S8.1.2)
     - N/A – the seat does not have a fore-aft adjustment
   - 3.4 If the driver’s seat height is adjustable, use all the controls that affect height to put it in the lowest position while maintaining the middle fore-aft position. (S8.1.2)
     - N/A – No seat height adjustment
   - 3.5 Position the driver’s seat adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
     - N/A – No lumbar adjustment
   - 3.6 The driver’s seat back angle, if adjustable, is set at the manufacturer’s nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (S4.5.4.1(b) and S8.1.3)
     - N/A – No seat back angle adjustment
     - Manufacturer’s design driver’s seat back angle ______________
     - Tested driver’s seat back angle ______________
   - 3.7 Is the driver seat a bucket seat?
     - [ ] Yes, go to 3.7.1 and skip 3.7.2.
     - [ ] No, go to 3.7.2 and skip 3.7.1.

   **3.7.1 Bucket seats:**
   - 3.7.1.1 Locate and mark a vertical Plane B through the longitudinal centerline of the driver’s seat cushion. The longitudinal centerline of a bucket seat cushion is determined at SgRP. (S4.5.4.1(b)(1))
   - 3.7.1.2 Locate the longitudinal horizontal line in plane B that is tangent to the highest point of the rear seat cushion behind the driver’s seat. Measure along this line from the front of the seat back of the rear seat to the rear of the seat back of the driver’s seat.
     - mm distance
     - Less than 720 mm – Pass
     - More than 720 mm – **FAIL**
     - Go to 4
3.7.2 Bench seats (including split bench seats):

3.7.2.1 Locate and mark a vertical Plane B through the center of the steering wheel parallel to the vehicle longitudinal centerline. (S4.5.4.1(b)(2))

3.7.2.2 Locate the longitudinal horizontal line in plane B that is tangent to the highest point of the rear seat cushion. Measure along this line from the front of the seat back of the rear seat to the rear of the seat back of the front seat.

____ mm distance

_less than 720 mm – Pass
__more than 720 mm - FAIL

Go to 4

4. Does the device turn the air bag on and off using the vehicle’s ignition key? (S4.5.4.2)

- Yes – Pass
- No – Fail

5. Is the on-off device separate from the ignition switch? (S4.5.4.2)

- Yes – Pass
- No – Fail

6. Is there a telltale light that comes on when the passenger air bag is turned off? (S4.5.4.2)

- Yes – Pass
- No – Fail

7. Telltale light (S4.5.4.3)

7.1 Is the light yellow? S4.5.4.3(a))

- Yes – Pass
- No – Fail

7.2 Are the words “PASSENGER AIR BAG OFF” or “PASS AIR BAG OFF” (S4.5.4.3(b)) on the telltale?

7.2.1 Yes – Pass, go to 7.3

7.2.2 within 25 mm of the telltale?

Measurement from the edge of the telltale light (mm):

- Yes – Pass
- No – Fail

7.3 Does the telltale remain illuminated while the air bag is turned off? (S4.5.4.3c)) (Leave the air bag off for 5 minutes.)

- Yes – Pass
- No – Fail

7.4 Is the telltale illuminated while the air bag is turned on? (S4.5.4.3(d))

- Yes – Fail
- No – Pass

7.5 Is the telltale combined with the air bag readiness indicator? (S4.5.4.3(e))

- Yes – Fail
- No – Pass

8. Owner’s Manual

8.1 Does the owner’s manual contain complete instructions on the operation of the on-off switch? (S4.5.4.4(a))

- Yes – Pass
- No – Fail
8.2 Does the owner’s manual contain a statement that the on-off switch should only be used when a member of one of the following risk groups is occupying the right front passenger seating position? (S4.5.4.4(b))

Infants: 
- there is no back seat
- the rear seat is too small to accommodate a child restraint
- there is a medical condition that must be monitored constantly

Children aged 1 to 12:
- there is no back seat
- space is not always available in the rear seat
- there is a medical condition that must be monitored constantly

Medical condition:
- medical risk causes special risk for passenger
- greater risk for harm than with the air bag on

Yes – Pass
No – Fail

8.3 Does the owner’s manual contain a warning about the safety consequences of using the on-off switch at other times?

Yes – Pass
No – Fail

REMARKS:

I certify that I have read and performed each instruction.

Signature: __________________________

Date: 2/4/09
DATA SHEET 8

LAP BELT LOCKABILITY

Passenger cars, trucks, buses, and multipurpose passenger vehicles with a GVWR of 10,000 pounds or less. (S7.1.1.5)

Test Vehicle: 2009 Chevrolet Cobalt  NHTSA No.: C90106
Test Program: FMVSS 208 Compliance  Test Date: 2/4/09
Test Technician: Chris Novak

Complete one of these forms for each designated seating position that can be adjusted to forward-facing or that is a forward-facing seat, other than the driver’s seat (S7.1.1.5(a), and that has seat belt retractors that are not solely automatic locking retractors. (S7.1.1.5(c))

DESIGNATED SEATING POSITION: Front Passenger

N/A – No retractor is at this position
N/A – The retractor is an automatic locking retractor ONLY

1. Record test fore-aft seat position: Mid-track – Middle
   (S7.1.1.5(c)(1)) (Any position is acceptable)
2. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle. (S7.1.1.5 (a))
   X Yes – Pass
   No – Fail
3. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT require inverting, twisting or deforming of the belt webbing. (S7.1.1.5 (a))
   X Yes – Pass
   No – Fail
4. Place any adjustable seat belt anchorage in the lowest adjustment position.
   N/A The anchorage is not adjustable.
5. Buckle the seat belt. (S7.1.1.5(c)(1))
6. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))
7. Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
8. Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing?
   X Yes (go to 8.1)
   No (go to 9)
8.1 Does the vehicle owner’s manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system. (S7.1.1.5(b))
   X Yes – Pass
   No – Fail
9. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner’s manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7.1.1.5(c)(2) & S7.1.1.5(c)(1))
10. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
    Measured distance between A and B (inches): 71 ½
11. Readjust the belt system so that the webbing between points A and B is at \( \frac{1}{2} \) the maximum length of the webbing. (S7.1.1.5(c)(3))

12. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in Figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))

13. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))

14. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))

15. Let the seat belt webbing retract to its minimum length with the seat belt still buckled

16. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in Figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))

17. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))

18. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))

19. Subtract the measurement in 13 from the measurement in 14 and the measurement in 17 from the measurement in 18. Is the difference 2 inches or less for both? (S7.1.1.5(c)(7))

Yes – Pass
No – Fail
20. Subtract the measurement in 14 from the measurement in 10 and the measurement in 18 from the measurement in 10. Is the difference 3 inches or more for both? (S7.1.1.5(c)(8))

10-14 = 71 1/2 - 36 = 35 1/2 inches;
10-18 = 71 1/2 - 24 3/4 = 46 3/4 inches

Yes – Pass
No – Fail

REMARKS:
Signature: __________________________ Date: 2/4/09

I certify that I have read and performed each instruction.

Figure 5. - Webbing Tension Pull Device
DATA SHEET 8

LAP BELT LOCKABILITY

Passenger cars, trucks, buses, and multipurpose passenger vehicles with a GVWR of 10,000 pounds or less. (S7.1.1.5)

Test Vehicle: 2009 Chevrolet Cobalt
Test Program: FMVSS 208 Compliance
Test Technician: Jaime Aide
NHTSA No.: C90106
Test Date: 2/4/09

Complete one of these forms for each designated seating position that can be adjusted to forward-facing or that is a forward-facing seat, other than the driver’s seat (S7.1.1.5(a), and that has seat belt retractors that are not solely automatic locking retractors. (S7.1.1.5(c))

<table>
<thead>
<tr>
<th>DESIGNATED SEATING POSITION:</th>
<th>Left Rear Passenger</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A – No retractor is at this position</td>
<td></td>
</tr>
<tr>
<td>N/A – The retractor is an automatic locking retractor ONLY</td>
<td></td>
</tr>
<tr>
<td>1. Record test fore-aft seat position: <strong>FIXED</strong> (S7.1.1.5(c)(1)) (Any position is acceptable)</td>
<td></td>
</tr>
<tr>
<td>2. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does <strong>NOT</strong> have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle. (S7.1.1.5 (a))</td>
<td></td>
</tr>
<tr>
<td>Yes – Pass</td>
<td></td>
</tr>
<tr>
<td>No – Fail</td>
<td></td>
</tr>
<tr>
<td>3. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does <strong>NOT</strong> require inverting, twisting or deforming of the belt webbing. (S7.1.1.5 (a))</td>
<td></td>
</tr>
<tr>
<td>Yes – Pass</td>
<td></td>
</tr>
<tr>
<td>No – Fail</td>
<td></td>
</tr>
<tr>
<td>4. Place any adjustable seat belt anchorage in the lowest adjustment position.</td>
<td></td>
</tr>
<tr>
<td>N/A The anchorage is not adjustable.</td>
<td></td>
</tr>
<tr>
<td>5. Buckle the seat belt. (S7.1.1.5(c)(1))</td>
<td></td>
</tr>
<tr>
<td>6. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))</td>
<td></td>
</tr>
<tr>
<td>7. Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))</td>
<td></td>
</tr>
<tr>
<td>8. Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing?</td>
<td></td>
</tr>
<tr>
<td>Yes (go to 8.1)</td>
<td></td>
</tr>
<tr>
<td>No (go to 9)</td>
<td></td>
</tr>
<tr>
<td>8.1 Does the vehicle owner’s manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system. (S7.1.1.5(b))</td>
<td></td>
</tr>
<tr>
<td>Yes – Pass</td>
<td></td>
</tr>
<tr>
<td>No – Fail</td>
<td></td>
</tr>
<tr>
<td>9. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner’s manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7.1.1.5(c)(2) &amp; S7.1.1.5(c)(1))</td>
<td></td>
</tr>
<tr>
<td>10. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))</td>
<td></td>
</tr>
<tr>
<td>Measured distance between A and B (inches): 70 ½</td>
<td></td>
</tr>
</tbody>
</table>
11. Readjust the belt system so that the webbing between points A and B is at 1/2 the maximum length of the webbing. (S7.1.1.5(c)(3))

12. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in Figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))

   Measured force application angle: 12 (spec. 5 - 15 degrees)

13. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))

   Measured distance between A and B: 35 1/4 inches

14. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))

   Record onset rate: 20 lb/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))

   Measured distance between A and B: 35 5/8 inches (S7.1.1.5(c)(6))

15. Let the seat belt webbing retract to its minimum length with the seat belt still buckled

16. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in Figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))

   Measured force application angle: 11 (spec. 5 - 15 degrees)

17. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))

   Measured distance between A and B: 12 1/2 inches

18. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))

   Record onset rate: 20 lb/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))

   Measured distance between A and B: 13 7/8 inches (S7.1.1.5(c)(6))

19. Subtract the measurement in 13 from the measurement in 14 and the measurement in 17 from the measurement in 18. Is the difference 2 inches or less for both? (S7.1.1.5(c)(7))

   14 – 13 = 35 5/8 – 35 1/4 = 3/8 inch;
   18 – 17 = 13 7/8 – 12 1/4 = 1 3/8 inches

   Yes – Pass
   No – Fail
20. Subtract the measurement in 14 from the measurement in 10 and the measurement in 18 from the measurement in 10. Is the difference 3 inches or more for both? (S7.1.1.5(c)(8))

\[
\begin{align*}
10-14 &= 70 \frac{1}{2} - 35 \frac{5}{8} = 34 \frac{7}{8} \text{ inches;} \\
10-18 &= 70 \frac{1}{2} - 13 \frac{7}{8} = 56 \frac{5}{8} \text{ inches}
\end{align*}
\]

\[\times\] Yes – Pass
\[\times\] No – Fail

REMARKS:

Signature: __________________________ Date: 2/4/09

I certify that I have read and performed each instruction.
DATA SHEET 8

LAP BELT LOCKABILITY

Passenger cars, trucks, buses, and multipurpose passenger vehicles with a GVWR of 10,000 pounds or less. (S7.1.1.5)

Test Vehicle: 2009 Chevrolet Cobalt
Test Program: FMVSS 208 Compliance
Test Technician: Chris Novak
NHTSA No.: C90106
Test Date: 2/4/09

Complete one of these forms for each designated seating position that can be adjusted to forward-facing or that is a forward-facing seat, other than the driver’s seat (S7.1.1.5(a), and that has seat belt retractors that are not solely automatic locking retractors. (S7.1.1.5(c))

**DESIGNATED SEATING POSITION:** Center Rear Passenger

1. Record test fore-aft seat position: **FIXED** (S7.1.1.5(c)(1)) (Any position is acceptable)
   - X Yes – Pass
   - N/A No – Fail

2. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle. (S7.1.1.5 (a))
   - X Yes – Pass
   - N/A No – Fail

3. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT require inverting, twisting or deforming of the belt webbing. (S7.1.1.5 (a))
   - X Yes – Pass
   - N/A No – Fail

4. Place any adjustable seat belt anchorage in the lowest adjustment position.
   - X N/A The anchorage is not adjustable.

5. Buckle the seat belt. (S7.1.1.5(c)(1))

6. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))

7. Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))

8. Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing?
   - X Yes (go to 8.1)
   - N/A No (go to 9)

8.1 Does the vehicle owner’s manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system. (S7.1.1.5(b))
   - X Yes – Pass
   - N/A No – Fail

9. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner’s manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7.1.1.5(c)(2) & S7.1.1.5(c)(1))

10. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
    - X Measured distance between A and B (inches): 74 ¼
11. Readjust the belt system so that the webbing between points A and B is at ½ the maximum length of the webbing. (S7.1.1.5(c)(3))

12. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in Figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))

13. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))

14. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))
   - Measured force application angle: 11° (spec. 5 - 15 degrees)
   - Measured distance between A and B: 37 1/8 inches

15. Let the seat belt webbing retract to its minimum length with the seat belt still buckled

16. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in Figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))
   - Measured force application angle: 14° (spec. 5 - 15 degrees)

17. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))
   - Measured distance between A and B: 12 7/8 inches

18. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))
   - Record onset rate: 20 lb/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))
   - Measured distance between A and B: 12 7/8 inches

19. Subtract the measurement in 13 from the measurement in 14 and the measurement in 17 from the measurement in 18. Is the difference 2 inches or less for both? (S7.1.1.5(c)(7))
   - 14 – 13 = 37 1/8 – 37 1/8 = 0 inch;
   - 18 – 17 = 12 7/8 – 12 7/8 = 5/8 inch
   - Yes – Pass
   - No – Fail
20. Subtract the measurement in 14 from the measurement in 10 and the measurement in 18 from the measurement in 10. Is the difference 3 inches or more for both? (S7.1.1.5(c)(8))

\[ 10-14 = 74 \frac{3}{4} - 37 \frac{1}{8} = 37 \frac{1}{8} \text{ inches;} \]
\[ 10-18 = 74 \frac{3}{4} - 12 \frac{7}{8} = 61 \frac{3}{8} \text{ inches} \]

Yes – Pass
No – Fail

REMARKS:
Signature: __________________________ Date: 2/4/09

I certify that I have read and performed each instruction.
DATA SHEET 8

LAP BELT LOCKABILITY

Passenger cars, trucks, buses, and multipurpose passenger vehicles with a GVWR of 10,000 pounds or less. (S7.1.1.5)

Test Vehicle: 2009 Chevrolet Cobalt
Test Program: FMVSS 208 Compliance
Test Technician: Chris Novak
NHTSA No.: C90106
Test Date: 2/4/09

Complete one of these forms for each designated seating position that can be adjusted to forward-facing or that is a forward-facing seat, other than the driver's seat (S7.1.1.5(a), and that has seat belt retractors that are not solely automatic locking retractors. (S7.1.1.5(c))

DESIGNATED SEATING POSITION: Right Rear Passenger

1. Record test fore-aft seat position: FIXED
   (S7.1.1.5(c)(1)) (Any position is acceptable)

2. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle. (S7.1.1.5 (a))
   X Yes – Pass
   No – Fail

3. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does NOT require inverting, twisting or deforming of the belt webbing. (S7.1.1.5 (a))
   X Yes – Pass
   No – Fail

4. Place any adjustable seat belt anchorage in the lowest adjustment position.
   X N/A The anchorage is not adjustable.

5. Buckle the seat belt. (S7.1.1.5(c)(1))

6. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))

7. Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))

8. Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing?
   X Yes (go to 8.1)
   No (go to 9)

8.1 Does the vehicle owner’s manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system. (S7.1.1.5(b))
   X Yes – Pass
   No – Fail

9. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner’s manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7.1.1.5(c)(2) & S7.1.1.5(c)(1))

10. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
    Measured distance between A and B (inches): 69 1/2
11. Readjust the belt system so that the webbing between points A and B is at ½ the maximum length of the webbing. (S7.1.1.5(c)(3))

12. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in Figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))

*Measured force application angle: 12 (spec. 5 - 15 degrees)*

13. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))

*Measured distance between A and B: 34 ¾ inches*

14. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))

*Record onset rate: 20 lb/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))*

*Measured distance between A and B: 34 ¾ inches (S7.1.1.5(c)(6))*

15. Let the seat belt webbing retract to its minimum length with the seat belt still buckled

16. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in Figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))

*Measured force application angle: 12 (spec. 5 - 15 degrees)*

17. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))

*Measured distance between A and B: 13 inches*

18. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))

*Record onset rate: 20 lb/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))*

*Measured distance between A and B: 13 ¼ inches (S7.1.1.5(c)(6))*

19. Subtract the measurement in 13 from the measurement in 14 and the measurement in 17 from the measurement in 18. Is the difference 2 inches or less for both? (S7.1.1.5(c)(7))

*14 – 13 = 34 ¾ - 34 ¾ = 0 inch;*

*18 – 17 = 13 ½ - 13 = ½ inch*

Yes – Pass

No – Fail
20. Subtract the measurement in 14 from the measurement in 10 and the measurement in 18 from the measurement in 10. Is the difference 3 inches or more for both? (S7.1.1.5(c)(8))

\[
\begin{align*}
10-14 &= 69 \frac{1}{2} - 34 \frac{3}{4} = 34 \frac{3}{4} \text{ inches;} \\
10-18 &= 69 \frac{1}{2} - 13 \frac{1}{2} = 56 \text{ inches}
\end{align*}
\]

- Yes – Pass
- No – Fail

REMARKS:

Signature: __________________________ Date: 2/4/09

I certify that I have read and performed each instruction.
DATA SHEET 9
FMVSS 208 SEAT BELT WARNING SYSTEM CHECK (S7.3)

Test Vehicle: 2009 Chevrolet Cobalt
Test Program: FMVSS 208 Compliance
Test Technician: Chris Novak

1. The occupant is in the driver’s seat.
2. The seat belt is in the stowed position.
3. The key is in the “on” or “start” position.
4. The time duration of the audible signal beginning with key “on” or “start” is 6 seconds.
5. The occupant is in the driver’s seat.
6. The seat belt is in the stowed position.
7. The key is in the “on” or “start” position.
8. The time duration of the warning light beginning with key “on” or “start” is 75 seconds.
9. The occupant is in the driver’s seat.
10. The seat belt is in the latched position and with at least 4 inches of belt webbing extended.
11. The key is in the “on” or “start” position.
12. The time duration of the warning light beginning with key “on” or “start” is 0 seconds.
13. Complete the following table with the data from 4, 8, and 12 to determine which option is used.

<table>
<thead>
<tr>
<th>Warning light specification</th>
<th>Audible signal specification*</th>
</tr>
</thead>
<tbody>
<tr>
<td>S7.3 (a)(1) Belt stowed &amp; key on or start</td>
<td>Item 8: 75</td>
</tr>
<tr>
<td>S7.3 (a)(2) Belt latched &amp; key on or start</td>
<td>Item 12</td>
</tr>
<tr>
<td>S7.3 (a)(2) Belt stowed &amp; key on or start</td>
<td>Item 8: 75</td>
</tr>
</tbody>
</table>

* 49 USCS @ 30124 does NOT allow an audible signal to operate for more than 8 seconds.
A voluntary audible signal after the 4 to 8 second required signal may be provided. It must be differentiated from the required signal (5/25/2001 legal interpretation to Longacre and Associates).

14. The seat belt warning system meets the requirements of (manufacturers may comply with either section)
   - S7.3 (a)(1)
   - S7.3 (a)(2)
   - FAIL – Does NOT meet the requirements of either option

15. Note wording of visual warning: (S7.3(a)(1) and S7.3(a)(2))
   - Fasten Seat Belts
   - Fasten Belts
   - Symbol 101 - 🚩
   - FAIL – Does not use any of the above wording or symbol

I certify that I have read and performed each instruction.

Signature: ___________________________  Date: 2/4/09
**DATA SHEET 10**  
**BELT CONTACT FORCE (S7.4.3)**

<table>
<thead>
<tr>
<th>Test Vehicle:</th>
<th>2009 Chevrolet Cobalt</th>
<th>NHTSA No.:</th>
<th>C90106</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Program:</td>
<td>FMVSS 208 Compliance</td>
<td>Test Date:</td>
<td>2/4/09</td>
</tr>
<tr>
<td>Test Technician:</td>
<td>Matt Jacobson</td>
<td>NHTSA No.:</td>
<td></td>
</tr>
</tbody>
</table>

Test all Type 2 seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

**DESIGNATED SEATING POSITION:** Left Rear Passenger

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
</table>
| X | 1. Does the vehicle incorporate a webbing tension-relieving device?  
   Yes (this form is complete)  
   No (continue with this check sheet) |
| X | 2. Position the seat’s adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)  
   N/A – No lumbar adjustment |
| X | 3. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)  
   N/A – No additional support adjustment |
| X | 4. Is the fore-aft position of the seat adjustable?  
   No – go to 5  
   Yes – go to 4.1  
   4.1 Use all the seat controls that have any affect on the fore-aft movement of the seat to move the seat cushion to the rearmost position. **Mark** this position. (8/31/95 legal interp to Hogan and Hartson)  
   4.2 Use all the seat controls that have any affects on the fore-aft movement of the seat to move the seat cushion to the foremost position. **Mark** this position. (8/31/95 legal interp to Hogan and Hartson)  
   4.3 **Mark** each fore-aft position so that there is a visual indication when the seat is at a particular position. For manual seats, **mark** each detent. For power seats, mark only the rearmost, middle and foremost positions. Label three of the positions with the following: F for foremost, M for mid-position (if there is no mid-position, label the closest adjustment position to the rear of the mid-point), and R for rearmost. Determine the mid fore-aft seat position based on the foremost and rearmost positions determined in items 4.1 and 4.2. (8/31/95 legal interp to Hogan and Hartson)  
   4.4 Move the seat to the mid position.  
   4.5 While maintaining the mid position, move the seat to its lowest position. For seats with adjustable seat cushions, use the manufacturer’s recommended seat cushion angle for determining the lowest height position.  
   X 5. Is the seat back angle adjustable?  
   No- go to 6  
   Yes- go to 5.1  
   5.1 Set and mark seat back angle, if adjustable, at the manufacturer’s nominal design riding position for a 50\(^{th}\) percentile adult male in the manner specified by the manufacturer.  
   N/A – No seat back angle adjustment  
   Manufacturer’s design seat back angle: ___________  
   Tested seat back angle: ___________ |
6. Is the seat a bucket seat?
   □ Yes, go to 6.1 and skip 6.2
   □ No, go to 6.2 and skip 6.1

6.1 Bucket seats:
   Locate and mark the longitudinal centerline of the seat cushion. The intersection of
   the vertical longitudinal plane that passes through the SgRP and the seat cushion
   upper surface determines the longitudinal centerline of a bucket seat cushion.
   (S10.4.1.2 and S16.3.1.10)

6.2 Bench seats (complete ONLY the one that is applicable to the seat being tested):

6.2.1 Driver Seat
   Locate and mark the longitudinal line on the seat cushion that marks the intersection
   of the vertical longitudinal plane through the centerline of the steering wheel and the
   seat cushion upper surface. (S10.4.1.1)

6.2.2 Front Outboard Passenger Seat
   Locate and mark the longitudinal centerline of the passenger seat cushion. The
   longitudinal centerline is the same distance from the longitudinal centerline of the vehicle
   as the center of the steering wheel. (S10.4.1.1)
   □ Record the distance from the longitudinal centerline of the vehicle to the center of the
   steering wheel. __________
   □ Record the distance from the longitudinal centerline of the vehicle to the longitudinal
   centerline of the seat cushion. __________

6.2.3 Rear designated seating positions
   Locate and mark the longitudinal centerline of the seat cushion. The intersection of the
   vertical longitudinal plane that passes through the SgRP and the seat cushion upper
   surface determines the longitudinal centerline.

7. Position the test dummies according to dummy position placement instructions in
   Appendix F. Complete the Appendix F check sheets, but include them in the test
   report ONLY if there is a test failure.

8. Fasten the seat belt latch.

9. Pull either 12 inches of belt webbing or the maximum available amount of belt webbing,
   whichever is less, from the retractor and then release it, allowing the belt webbing to
   return to the dummy's chest.

10. Locate the point where the centerline of the upper torso belt webbing crosses
    the midsagittal line on the dummy's chest. At that point pull the belt webbing out 3 inches
    from the dummy's chest and release until it is within one inch from the dummy's chest.
    (S10.8) Using a force measuring gage with a full scale range of no more than 1.5
    pounds, measure the contact force perpendicular to the dummy's chest exerted by the
    belt webbing.
    □ Contact Force (lb): 0.6
    □ 0.0 to 0.7 pounds – Pass
    □ Greater than 0.7 pounds - FAIL

REMARKS:

I certify that I have read and performed each instruction.

Signature: _________________________________ Date: 2/4/09
DATA SHEET 10
BELT CONTACT FORCE (S7.4.3)

Test Vehicle: 2009 Chevrolet Cobalt
Test Program: FMVSS 208 Compliance
Test Technician: Matt Jacobson

Test all Type 2 seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

DESIGNATED SEATING POSITION: Center Rear Passenger

1. Does the vehicle incorporate a webbing tension-relieving device?
   X Yes (this form is complete)
   X No (continue with this check sheet)

2. Position the seat’s adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
   X N/A – No lumbar adjustment

3. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)
   X N/A – No additional support adjustment

4. Is the fore-aft position of the seat adjustable?
   X No – go to 5
   X Yes – go to 4.1

   4.1 Use all the seat controls that have any affect on the fore-aft movement of the seat to move the seat cushion to the rearmost position. Mark this position. (8/31/95 legal interp to Hogan and Hartson)

   4.2 Use all the seat controls that have any affects on the fore-aft movement of the seat to move the seat cushion to the foremost position. Mark this position. (8/31/95 legal interp to Hogan and Hartson)

   4.3 Mark each fore-aft position so that there is a visual indication when the seat is at a particular position. For manual seats, mark each detent. For power seats, mark only the rearmost, middle and foremost positions. Label three of the positions with the following: F for foremost, M for mid-position (if there is no mid-position, label the closest adjustment position to the rear of the mid-point), and R for rearmost. Determine the mid fore-aft seat position based on the foremost and rearmost positions determined in items 4.1 and 4.2. (8/31/95 legal interp to Hogan and Hartson)

   4.4 Move the seat to the mid position.

   4.5 While maintaining the mid position, move the seat to its lowest position. For seats with adjustable seat cushions, use the manufacturer’s recommended seat cushion angle for determining the lowest height position.

   X 5. Is the seat back angle adjustable?

   X No- go to 6
   X Yes- go to 5.1

   5.1 Set and mark seat back angle, if adjustable, at the manufacturer’s nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer.

   X N/A – No seat back angle adjustment
   Manufacturer’s design seat back angle: __________
   Tested seat back angle: __________
6. Is the seat a bucket seat?
   - Yes, go to 6.1 and skip 6.2
   - No, go to 6.2 and skip 6.1

6.1 Bucket seats:
   Locate and mark the longitudinal centerline of the seat cushion. The intersection of
   the vertical longitudinal plane that passes through the SgRP and the seat cushion
   upper surface determines the longitudinal centerline of a bucket seat cushion.
   (S10.4.1.2 and S16.3.1.10)

6.2 Bench seats (complete ONLY the one that is applicable to the seat being tested):
   6.2.1 Driver Seat
   Locate and mark the longitudinal line on the seat cushion that marks the intersection
   of the vertical longitudinal plane through the centerline of the steering wheel and the
   seat cushion upper surface. (S10.4.1.1)

6.2.2 Front Outboard Passenger Seat
   Locate and mark the longitudinal centerline of the passenger seat cushion. The
   longitudinal centerline is the same distance from the longitudinal centerline of the vehicle
   as the center of the steering wheel. (S10.4.1.1)

6.2.3 Rear designated seating positions
   Locate and mark the longitudinal centerline of the seat cushion. The intersection of
   the vertical longitudinal plane that passes through the SgRP and the seat cushion upper
   surface determines the longitudinal centerline.

7. Position the test dummies according to dummy position placement instructions in
   Appendix F. Complete the Appendix F check sheets, but include them in the test
   report ONLY if there is a test failure.

8. Fasten the seat belt latch.

9. Pull either 12 inches of belt webbing or the maximum available amount of belt webbing,
   whichever is less, from the retractor and then release it, allowing the belt webbing to
   return to the dummy's chest.

10. Locate the point where the centerline of the upper torso belt webbing crosses
    the midsagittal line on the dummy's chest. At that point pull the belt webbing out 3 inches
    from the dummy's chest and release until it is within one inch from the dummy's chest.
    (S10.8) Using a force measuring gage with a full scale range of no more than 1.5
    pounds, measure the contact force perpendicular to the dummy's chest exerted by the
    belt webbing.

   Contact Force (lb): 0.5
   - 0.0 to 0.7 pounds – Pass
   - Greater than 0.7 pounds - FAIL

REMARKS:

I certify that I have read and performed each instruction.

Signature: _________________________________ Date: 2/4/09
DATA SHEET 10
BELT CONTACT FORCE (S7.4.3)

Test Vehicle: 2009 Chevrolet Cobalt  
Test Program: FMVSS 208 Compliance  
Test Technician: Matt Jacobson

Test all Type 2 seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

DESIGNATED SEATING POSITION: Right Rear Passenger

1. Does the vehicle incorporate a webbing tension-relieving device?
   - Yes (this form is complete)
   - No (continue with this check sheet)

2. Position the seat’s adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
   - N/A – No lumbar adjustment

3. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)
   - N/A – No additional support adjustment

4. Is the fore-aft position of the seat adjustable?
   - No – go to 5
   - Yes – go to 4.1

   4.1 Use all the seat controls that have any affect on the fore-aft movement of the seat to move the seat cushion to the rearmost position. Mark this position. (8/31/95 legal interp to Hogan and Hartson)

   4.2 Use all the seat controls that have any affects on the fore-aft movement of the seat to move the seat cushion to the foremost position. Mark this position. (8/31/95 legal interp to Hogan and Hartson)

   4.3 Mark each fore-aft position so that there is a visual indication when the seat is at a particular position. For manual seats, mark each detent. For power seats, mark only the rearmost, middle and foremost positions. Label three of the positions with the following: F for foremost, M for mid-position (if there is no mid-position, label the closest adjustment position to the rear of the mid-point), and R for rearmost. Determine the mid fore-aft seat position based on the foremost and rearmost positions determined in items 4.1 and 4.2. (8/31/95 legal interp to Hogan and Hartson)

   4.4 Move the seat to the mid position.

   4.5 While maintaining the mid position, move the seat to its lowest position. For seats with adjustable seat cushions, use the manufacturer’s recommended seat cushion angle for determining the lowest height position.

5. Is the seat back angle adjustable?
   - No- go to 6
   - Yes- go to 5.1

   5.1 Set and mark seat back angle, if adjustable, at the manufacturer’s nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer.
   - N/A – No seat back angle adjustment
   - Manufacturer’s design seat back angle: ___________
   - Tested seat back angle: ____________
6. Is the seat a bucket seat?
   □ Yes, go to 6.1 and skip 6.2
   □ No, go to 6.2 and skip 6.1

   6.1 Bucket seats:
   Locate and mark the longitudinal centerline of the seat cushion. The intersection of
   the vertical longitudinal plane that passes through the SgRP and the seat cushion
   upper surface determines the longitudinal centerline of a bucket seat cushion.
   (S10.4.1.2 and S16.3.1.10)

   6.2 Bench seats (complete ONLY the one that is applicable to the seat being tested):
   6.2.1 Driver Seat
   Locate and mark the longitudinal line on the seat cushion that marks the intersection
   of the vertical longitudinal plane through the centerline of the steering wheel and the
   seat cushion upper surface. (S10.4.1.1)

   6.2.2 Front Outboard Passenger Seat
   Locate and mark the longitudinal centerline of the passenger seat cushion. The
   longitudinal centerline is the same distance from the longitudinal centerline of the vehicle
   as the center of the steering wheel. (S10.4.1.1)
   □ Record the distance from the longitudinal centerline of the vehicle to the center of the
     steering wheel. __________
   □ Record the distance from the longitudinal centerline of the vehicle to the longitudinal
     centerline of the seat cushion. __________

   6.2.3 Rear designated seating positions
   Locate and mark the longitudinal centerline of the seat cushion. The intersection of
   the vertical longitudinal plane that passes through the SgRP and the seat cushion upper
   surface determines the longitudinal centerline.

   7. Position the test dummies according to dummy position placement instructions in
   Appendix F. Complete the Appendix F check sheets, but include them in the test
   report ONLY if there is a test failure.

   8. Fasten the seat belt latch.

   9. Pull either 12 inches of belt webbing or the maximum available amount of belt webbing,
      whichever is less, from the retractor and then release it, allowing the belt webbing to
      return to the dummy's chest.

   10. Locate the point where the centerline of the upper torso belt webbing crosses
       the midsagittal line on the dummy's chest. At that point pull the belt webbing out 3 inches
       from the dummy's chest and release until it is within one inch from the dummy's chest.
       (S10.8) Using a force measuring gage with a full scale range of no more than 1.5
       pounds, measure the contact force perpendicular to the dummy's chest exerted by the
       belt webbing.

   Contact Force (lb): 0.5
   □ 0.0 to 0.7 pounds – Pass
   □ Greater than 0.7 pounds - FAIL

REMARKS:

I certify that I have read and performed each instruction.

Signature: _________________________________ Date: 2/4/09
Test all front outboard seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

**DESIGNATED SEATING POSITION:** Not Applicable For Any Position - Passenger Car

1. Position the seat’s adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
   - N/A – No lumbar adjustment
2. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)
   - N/A – No additional support adjustment
3. Is the fore-aft position of the seat adjustable?
   - No – go to 4
   - Yes – go to 3.1
3.1 Use all the seat controls that have any affect on the fore-aft movement of the seat to move the seat cushion to the rearmost position. Mark this position. (8/31/95 legal interp to Hogan and Hartson)
3.2 While maintaining the forward most position, move the seat to its lowest position. For seats with adjustable seat cushions, use the manufacturer’s recommended seat cushion angle for determining the lowest height position.
4. Is the seat back angle adjustable?
   - No- go to 5
   - Yes- go to 4.1
4.1 Set and mark seat back angle, if adjustable, at the manufacturer’s nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer.
   - N/A – No seat back angle adjustment
   - Manufacturer’s design seat back angle: ____________
   - Tested seat back angle: _____________
5. Is the seat a bucket seat?
   - Yes, go to 5.1 and skip 5.2
   - No, go to 5.2 and skip 5.1
5.1 Bucket seats:
   - Locate and mark the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S10.4.1.2 and S16.3.1.10)
5.2 Bench seats (complete ONLY the one that is applicable to the seat being tested):
   5.2.1 Driver Seat
   - Locate and mark the longitudinal line on the seat cushion that marks the intersection of the vertical longitudinal plane through the centerline of the steering wheel and the seat cushion upper surface. (S10.4.1.1)
5.2.2 Front Outboard Passenger Seat

Locate and mark the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S10.4.1.1)

Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. __________

Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. __________

6. Position the test dummy using the procedures in Appendix F. (Some modifications to the positioning procedure may need to be made because the seat is in the forward most position. Note on the Appendix F positioning check sheet any deviations necessary to position the Part 572, Subpart E dummy). Complete the Appendix F check sheets, but include them in the test report ONLY if there is a test failure.

7. Position the adjustable seat belt anchorage in the manufacturer’s nominal design position for a 50th percentile adult male occupant.

8. Attach the inboard reach string to the base of the head following the instructions on Figure 3.

9. Attach the outboard reach string to the torso sheath following the instructions on Figure 3.

10. Place the latch plate in the stowed position.

11. Extend the inboard reach string in front of the dummy and then backward and outboard to the latch plate to generate arcs of the reach envelope of the test dummy's arms. Is the latch plate within the reach envelope?

   - Yes – Pass
   - No

12. Extend the outboard reach string in front of the dummy and then backward and outboard to the latch plate to generate arcs of the reach envelope of the test dummy's arms. Is the latch plate within the reach envelope?

   - Yes – Pass
   - No

13. Is the latch plate within the inboard (item 11) or outboard (item 12) reach envelope?

   - Yes – Pass
   - No – Fail

14. Using the clearance test block, specified in Figure 4, is there sufficient clearance between the vehicle seat and the side of vehicle interior to allow the test block to move unhindered to the latch plate or buckle?

   - Yes – Pass
   - No – Fail

REMARKS:

I certify that I have read and performed each instruction.

Signature: _________________________________ Date: 2/5/09
Figure 3. Location of Anchoring Points for Latchplate Reach Limiting Chains or Strings to Test for Latchplate Accessibility Using Subpart B Test Device

Figure 4—USE OF CLEARANCE TEST BLOCK TO DETERMINE HAND/ARM ACCESS
DATA SHEET 12
SEAT BELT RETRACTION (S7.4.5)

Test Vehicle: 2009 Chevrolet Cobalt  
NHTSA No.: C90106  
Test Program: FMVSS 208 Compliance  
Test Date: 2/5/09  
Test Technician: Alyssa Paul

Test all front outboard seat belts, except those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

**DESIGNATED SEATING POSITION:** Not Applicable For Any Position – Passenger Car

**1.** Is the vehicle a passenger car or walk-in van-type vehicle?
   - X Yes, this form is complete
   - No

**2.** Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
   - N/A – No lumbar adjustment

**3.** Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)
   - N/A – No additional support adjustment

**4.** Is the fore-aft position of the seat adjustable?
   - No – go to 5
   - Yes – go to 4.1

**4.1** Use all the seat controls that have any affect on the fore-aft movement of the seat to move the seat cushion to the rearmost position. **Mark** this position. (8/31/95 legal interp to Hogan and Hartson)

**4.2** Use all the seat controls that have any affects on the fore-aft movement of the seat to move the seat cushion to the foremost position. **Mark** this position. (8/31/95 legal interp to Hogan and Hartson)

**4.3** **Mark** each fore-aft position so that there is a visual indication when the seat is at a particular position. For manual seats, **mark** each detent. For power seats, mark only the rearmost, middle and foremost positions. Label three of the positions with the following: F for foremost, M for mid-position (if there is no mid-position, label the closest adjustment position to the rear of the mid-point), and R for rearmost. Determine the mid fore-aft seat position based on the foremost and rearmost positions determined in items 4.1 and 4.2. (8/31/95 legal interp to Hogan and Hartson)

**4.4** Move the seat to the mid position.

**4.5** While maintaining the mid position, move the seat to its lowest position. For seats with adjustable seat cushions, use the manufacturer’s recommended seat cushion angle for determining the lowest height position.

**5.** Is the seat back angle adjustable?
   - No - go to 6
   - Yes - go to 5.1

**5.1** Set and mark seat back angle, if adjustable, at the manufacturer’s nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer.
   - N/A – No seat back angle adjustment
   - Manufacturer’s design seat back angle: ____________
   - Tested seat back angle: ____________

**6.** Is the seat a bucket seat?
   - Yes, go to 6.1 and skip 6.2
   - No, go to 6.2 and skip 6.1

Test Vehicle: 2009 Chevrolet Cobalt
Test Program: FMVSS 208 Compliance
Test Technician: Alyssa Paul
NHTSA No.: C90106
Test Date: 2/5/09
6.1 Bucket Seats:
Locate and mark the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S10.4.1.2 and S16.3.1.10)

6.2 Bench seats (complete ONLY the one that is applicable to the seat being tested):

6.2.1 Driver Seat
Locate and mark the longitudinal line on the seat cushion that marks the intersection of the vertical longitudinal plane through the centerline of the steering wheel and the seat cushion upper surface. (S10.4.1.1)

6.2.2 Front Outboard Passenger Seat
Locate and mark the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S10.4.1.1)

Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. ________
Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. ________

7. Position the Part 572 Subpart E test dummy according to dummy position placement instructions in Appendix F. Complete the Appendix F check sheets, but include them in the test report ONLY if there is a test failure.

8. Fasten the seat belt around the dummy.

9. Remove all slack from the lap belt portion. (S10.9)
N/A, the seat does not have a fore-aft adjustment

10. Pull the upper torso webbing out of the retractor and allow it to retract; repeat this four times. (S10.9)

11. Apply a 2 to 4 pound tension load to the lap belt. (S10.9)
Pound load applied:

12. Is the belt system equipped with a tension relieving device?

Yes, continue
No, go to 14

13. Introduce the maximum amount of slack into the upper torso belt that is recommended by the vehicle manufacturer in the vehicle owner's manual. (S10.9).

14. Check the statement that applies to this test vehicle:

14.1 The torso and lap belt webbing of the seat belt system automatically retracts to a stowed position when the adjacent vehicle door is in an open position and the seat belt latch plate is released.

Yes – Pass go to 15
No – go to 14.2

14.2 The torso and lap belt webbing of the seat belt system automatically retracts when the seat belt latch plate is released.

Yes – Pass go to 15
No – go to 14.3

14.3 Neither 14.1 nor 14.2 apply.
Fail

15. With the webbing and hardware in the stowed position are the webbing and hardware prevented from being pinched when the door is closed?

Yes – Pass
No – Fail
16. If this test vehicle has an open body (without doors) and has a belt system with a tension relieving device, does the belt system fully retract when the tension-relieving device is deactivated?

- N/A – Not an open body vehicle
- Yes – Pass
- No – Fail

REMARKS:

Signature: ___________________________ Date: 2/5/09

I certify that I have read and performed each instruction.
DATA SHEET 13
SEAT BELT GUIDES AND HARDWARE (S7.4.6)

Test Vehicle: 2009 Chevrolet Cobalt  NHTSA No.: C90106
Test Program: FMVSS 208 Compliance  Test Date: 2/4/09
Test Technician: Matt Jacobson

Test seat belts except those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

DESIGNATED SEATING POSITION: Left Rear Passenger

1. Is the seat cushion movable so that the seat back serves a function other than seating? (S7.4.6.1 (b))
   - Yes, this form is complete
   - No, go to 2

2. Is the seat removable? (S7.4.6.1(b))
   - Yes, this form is complete
   - No, go to 3

3. Is the seat movable so that the space formerly occupied by the seat can be used for a secondary function? (S7.4.6.1(b))
   - Yes, this form is complete
   - No, go to 4

4. Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back? (S7.4.6.1(a))
   - No, this form is complete

5. Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)? (S7.4.6.1(a))
   - Yes – Pass
   - No – Fail
   Identify the part(s) on top or above the seat.
   - Seat belt latch plate
   - Buckle
   - Seat belt webbing

6. Are the remaining two seat belt parts accessible under normal conditions?
   - Yes – Pass
   - No – Fail

7. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the belt is completely retracted or, if the belt is nonretractable, the belt is unlatched. (S7.4.6.2)
   - Yes – Pass
   - No – Fail

8. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat is moved to any position to which it is designed to be adjusted. (S7.4.6.2)
   - Yes – Pass
   - No – Fail

9. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat back, if foldable, is folded forward as far as possible and then moved backward into position. (S7.4.6.2)
   - Yes – Pass
   - No – Fail

10. Is the inboard receptacle end of the seat belt assembly, installed in the front outboard designated seating position, accessible with the center armrest in any position to which it can be adjusted (without moving the armrest)? (S7.4.6.2)
    - Yes – Pass
    - No – Fail
    - N/A – Rear seat

REMARKS:

Signature: Matt Jacobson  Date: 2/4/09

I certify that I have read and performed each instruction.
Test seat belts except those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

**DESIGNATED SEATING POSITION:** Center Rear Passenger

1. Is the seat cushion movable so that the seat back serves a function other than seating? (S7.4.6.1 (b))
   - [X] Yes, this form is complete
   - [X] No, go to 2

2. Is the seat removable? (S7.4.6.1(b))
   - [X] Yes, this form is complete
   - [X] No, go to 3

3. Is the seat movable so that the space formerly occupied by the seat can be used for a secondary function? (S7.4.6.1(b))
   - [X] Yes, this form is complete
   - [X] No, go to 4

4. Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back? (S7.4.6.1(a))
   - [X] Yes, go to 5
   - [X] No, this form is complete

5. Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)? (S7.4.6.1(a))
   - [X] Yes – Pass
   - [X] No – Fail
   - Identify the part(s) on top or above the seat.
   - [X] Seat belt latch plate
   - [ ] Buckle
   - [X] Seat belt webbing

6. Are the remaining two seat belt parts accessible under normal conditions?
   - [X] Yes – Pass
   - [X] No – Fail

7. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the belt is completely retracted or, if the belt is nonretractable, the belt is unlatched. (S7.4.6.2)
   - [X] Yes – Pass
   - [X] No – Fail

8. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat is moved to any position to which it is designed to be adjusted. (S7.4.6.2)
   - [X] Yes – Pass
   - [X] No – Fail

9. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat back, if foldable, is folded forward as far as possible and then moved backward into position. (S7.4.6.2)
   - [X] Yes – Pass
   - [X] No – Fail

10. Is the inboard receptacle end of the seat belt assembly, installed in the front outboard designated seating position, accessible with the center armrest in any position to which it can be adjusted (without moving the armrest)? (S7.4.6.2)
    - [X] Yes – Pass
    - [X] No – Fail
    - [X] N/A – Rear seat

**REMARKS:**

Signature: _______________________________ Date: 2/4/09

I certify that I have read and performed each instruction.
DATA SHEET 13
SEAT BELT GUIDES AND HARDWARE (S7.4.6)

Test Vehicle: 2009 Chevrolet Cobalt  
NHTSA No.: C90106
Test Program: FMVSS 208 Compliance  
Test Date: 2/4/09
Test Technician: Wayne Dahlke

Test seat belts except those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

<table>
<thead>
<tr>
<th>DESIGNATED SEATING POSITION: Right Rear Passenger</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Is the seat cushion movable so that the seat back serves a function other than seating? (S7.4.6.1(b))</td>
</tr>
<tr>
<td>Yes, this form is complete</td>
</tr>
<tr>
<td>2. Is the seat removable? (S7.4.6.1(b))</td>
</tr>
<tr>
<td>Yes, this form is complete</td>
</tr>
<tr>
<td>3. Is the seat movable so that the space formerly occupied by the seat can be used for a secondary function? (S7.4.6.1(b))</td>
</tr>
<tr>
<td>Yes, this form is complete</td>
</tr>
<tr>
<td>4. Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back? (S7.4.6.1(a))</td>
</tr>
<tr>
<td>Yes, go to 5</td>
</tr>
<tr>
<td>5. Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)? (S7.4.6.1(a))</td>
</tr>
<tr>
<td>Yes – Pass</td>
</tr>
<tr>
<td>Identify the part(s) on top or above the seat.</td>
</tr>
<tr>
<td>Seat belt latch plate</td>
</tr>
<tr>
<td>6. Are the remaining two seat belt parts accessible under normal conditions?</td>
</tr>
<tr>
<td>Yes – Pass</td>
</tr>
<tr>
<td>7. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the belt is completely retracted or, if the belt is nonretractable, the belt is unlatched. (S7.4.6.2)</td>
</tr>
<tr>
<td>Yes – Pass</td>
</tr>
<tr>
<td>8. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat is moved to any position to which it is designed to be adjusted. (S7.4.6.2)</td>
</tr>
<tr>
<td>Yes – Pass</td>
</tr>
<tr>
<td>9. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat back, if foldable, is folded forward as far as possible and then moved backward into position. (S7.4.6.2)</td>
</tr>
<tr>
<td>Yes – Pass</td>
</tr>
<tr>
<td>10. Is the inboard receptacle end of the seat belt assembly, installed in the front outboard designated seating position, accessible with the center armrest in any position to which it can be adjusted (without moving the armrest)? (S7.4.6.2)</td>
</tr>
<tr>
<td>Yes – Pass</td>
</tr>
</tbody>
</table>

REMARKS:
Signature: ________________ Date: 2/4/09

I certify that I have read and performed each instruction.
DATA SHEET 16
AIR BAG SUPPRESSION TELTALTE (S19.2.2)

Test Vehicle: 2009 Chevrolet Cobalt          NHTSA No.: C90106
Test Program: FMVSS 208 Compliance          Test Date: 2/13/09
Test Technician: Jeff Lewandowski

1. Is the vehicle certified to any suppression performance standards of FMVSS 208?
   X Yes - go to 2
   _No - this form is complete

2. Does telltale emit yellow light when the air bag is suppressed? (S19.2.2(a))
   X Yes - Pass ___ NO - FAIL

3. Are the words “PASSENGER AIR BAG OFF” or “PASS AIR BAG OFF” (S19.2.2(b))
   X 3.1 on the telltale? (S19.2.2(b))
      X Yes - Pass, go to 4
      _No - go to 3.2
   ___ 3.2 Within 25 mm of the telltale? (S19.2.2(b)) _____ mm from the edge of the telltale light
      X Yes - Pass ___ NO - FAIL

4. Is the telltale separate from the air bag readiness indicator? (S19.2.2(c))
   X Yes - Pass ___ NO - FAIL

5. Is the telltale within the interior of the vehicle? (S19.2.2(d))
   X Yes - Pass ___ NO - FAIL

6. Is the telltale forward of and above the design H-point of both the driver’s and the front
   outboard passenger’s seat when the seats are in their forwardmost seating positions? (S19.2.2(d))
   X Yes - Pass ___ NO - FAIL

7. Is the telltale away from surfaces that can be used for temporary or permanent storage of objects that could obscure the telltale from either the driver’s or front outboard passenger’s view? (S19.2.2(d))
   X Yes - Pass ___ NO - FAIL

8. Is the telltale located so that it is not obscured from the driver or front outboard passenger by a rear-facing child restraint in Appendix A installed in the front outboard passenger seat? (S19.2.2(d))
   X Yes - Pass ___ NO - FAIL

9. Is the telltale visible or recognizable during the night? (S19.2.2(e))
   X Yes - Pass ___ NO - FAIL

10. Is the telltale visible or recognizable during the day? (S19.2.2(e))
    X Yes - Pass ___ NO - FAIL

11. If there is a visibility adjustment, do all the adjustment levels make the telltale visible and
    recognizable? (S19.2.2(g))
    X N/A-No visibility adjustment
    ___ Yes - Pass ___ NO - FAIL

12. Does the telltale remain illuminated while the air bag is suppressed? (S19.2.2(h)) (Leave
    the air bag suppressed for 5 minutes.)
    X Yes - Pass ___ NO - FAIL

13. Is the telltale off while the air bag is activated? (S19.2.2(h)) (Leave the air bag activated
    for 5 minutes.)
    X Yes - Pass ___ NO - FAIL

________________________________________________  2/13/09
I certify that I have read and performed each instruction.          Date

Test Vehicle: 2009 Chevrolet Cobalt          NHTSA No.: C90106
Test Program: FMVSS 208 Compliance          Test Date: 2/13/09
Test Technician: Jeff Lewandowski

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DATA SHEET 17 SUMMARY
Suppression Test Using 12-Month-Old CRABI Dummy (Part 572, Subpart R)
Section B Rear Facing CRS

<table>
<thead>
<tr>
<th>NHTSA NO.:</th>
<th>C90106</th>
<th>TEST DATE:</th>
<th>2/13/09</th>
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<tbody>
<tr>
<td>LABORATORY:</td>
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<td>TECHNICIANS:</td>
<td>JL</td>
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<tr>
<td>DUMMY TYPE:</td>
<td>12 Month Old</td>
<td>DUMMY SERIAL NO.:</td>
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<table>
<thead>
<tr>
<th>CHILD RESTRAINT NAME:</th>
<th>Britax</th>
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<tbody>
<tr>
<td>CHILD RESTRAINT MODEL:</td>
<td>Handle With Care 191</td>
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<tr>
<td>DATE OF MANUFACTURE:</td>
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Base: __On __Off  _X_ N/A-Restraint does not have a removable base

Manufacturer's design seat back angle: 3.75° on Headrest Post
Tested seat back angle: 3.9° on Headrest Post
Manufacturer's specified anchorage position: 2 (5 total detents, most upper as 0)
Tested anchorage position: 2 (5 total detents, most upper as 0)

A blanket and visor were not used in the suppression testing because they did not affect the weight sensing system used on the vehicle.

### Test Summary

<table>
<thead>
<tr>
<th>Seat Belt</th>
<th>Seat Slide</th>
<th>Cinch Load (N)</th>
<th>Result</th>
</tr>
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<tbody>
<tr>
<td>Belted</td>
<td>Forward</td>
<td>127</td>
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<tr>
<td>Rear</td>
<td>Middle</td>
<td>128</td>
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<tr>
<td>Facing</td>
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<td>133</td>
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<tr>
<td>Unbelted</td>
<td>Forward</td>
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<tr>
<td>Rear</td>
<td>Middle</td>
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<tr>
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<td>N/A</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Unbelted</td>
<td>Forward</td>
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<td>Suppressed</td>
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<tr>
<td>Forward</td>
<td>Middle</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Facing</td>
<td>Rearward</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
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</table>

Successful Unbelted Representative 5th Percentile Female Reactivation was performed with the seat in the Forward position. (Human Identification Code 036; 49.0 kg 149.9 cm)
DATA SHEET 17 SUMMARY
Suppression Test Using 12-Month-Old CRABI Dummy (Part 572, Subpart R)
Section B Rear Facing CRS

<table>
<thead>
<tr>
<th>NHTSA NO.:</th>
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<tr>
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<tr>
<td>DUMMY TYPE:</td>
<td>12 Month Old</td>
<td>DUMMY SERIAL NO.:</td>
<td>062</td>
</tr>
</tbody>
</table>

| CHILD RESTRAINT NAME: | Evenflo |
| CHILD RESTRAINT MODEL: | First Choice 204 |
| DATE OF MANUFACTURE: | 6-20-2000 |

Base: __On __Off __X N/A-Restraint does not have a removable base

Manufacturer's design seat back angle: 3.75° on Headrest Post
Tested seat back angle: 3.9° on Headrest Post
Manufacturer's specified anchorage position: 2 (5 total detents, most upper as 0)
Tested anchorage position: 2 (5 total detents, most upper as 0)

A blanket and visor were not used in the suppression testing because they did not affect the weight sensing system used on the vehicle.

Test Summary

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<tr>
<th>Seat Belt</th>
<th>Seat Slide</th>
<th>Cinch Load (N)</th>
<th>Result</th>
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<tbody>
<tr>
<td>Belted Rear Facing</td>
<td>Forward 7 *</td>
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<td></td>
<td>Middle</td>
<td>131</td>
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<tr>
<td></td>
<td>Rearward</td>
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<tr>
<td>Unbelted Rear Facing</td>
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<tr>
<td>Unbelted Forward Facing</td>
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<td>Suppressed</td>
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<tr>
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<td>Middle</td>
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<tr>
<td></td>
<td>Rearward</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
</tbody>
</table>

* The CRS would not fit in this Forward Seat Slide position. If there is a number in the Seat Slide column, it indicates the fore-aft detent position with respect to the foremost position. (1 = Full Forward; 22 = Full Rearward; 22 total Seat Slide detents)

Successful Unbelted Representative 5th Percentile Female Reactivation was performed with the seat in the Middle position. (Human Identification Code 036; 49.0 kg 149.9 cm)
DATA SHEET 17 SUMMARY
Suppression Test Using 12-Month-Old CRABI Dummy (Part 572, Subpart R)
Section B Rear Facing CRS

<table>
<thead>
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<td>LABORATORY:</td>
<td>MGA</td>
<td>TECHNICIANS:</td>
<td>WD</td>
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<td>DUMMY TYPE:</td>
<td>12 Month Old</td>
<td>DUMMY SERIAL NO.:</td>
<td>062</td>
</tr>
</tbody>
</table>

CHILD RESTRAINT NAME: Graco
CHILD RESTRAINT MODEL: Infant 8457
DATE OF MANUFACTURE: 8-31-2000

Base: _X_ On ___ Off ___N/A-Restraint does not have a removable base

Manufacturer's design seat back angle: 3.75° on Headrest Post
Tested seat back angle: 3.9° on Headrest Post
Manufacturer's specified anchorage position: 2 (5 total detents, most upper as 0)
Tested anchorage position: 2 (5 total detents, most upper as 0)

A blanket and visor were not used in the suppression testing because they did not affect the weight sensing system used on the vehicle.

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<thead>
<tr>
<th>Seat Belt</th>
<th>Seat Slide</th>
<th>Cinch Load (N)</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belted</td>
<td>Forward</td>
<td>133</td>
<td>Suppressed</td>
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<tr>
<td>Rear</td>
<td>Middle</td>
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<td>Suppressed</td>
</tr>
<tr>
<td>Facing</td>
<td>Rearward</td>
<td>127</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Unbelted</td>
<td>Forward 5 *</td>
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<td>Suppressed</td>
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<tr>
<td>Rear</td>
<td>Middle</td>
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<tr>
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<td>Rearward</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Unbelted</td>
<td>Forward</td>
<td>N/A</td>
<td>Suppressed</td>
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<tr>
<td>Forward</td>
<td>Middle</td>
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<td>Suppressed</td>
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<tr>
<td>Facing</td>
<td>Rearward</td>
<td>N/A</td>
<td>Suppressed</td>
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</tbody>
</table>

* The CRS would not fit in this Forward Seat Slide position. If there is a number in the Seat Slide column, it indicates the fore-aft detent position with respect to the foremost position. (1 = Full Forward; 22 = Full Rearward; 22 total Seat Slide detents)
DATA SHEET 17 SUMMARY
Suppression Test Using 12-Month-Old CRABI Dummy (Part 572, Subpart R)
Section B Rear Facing CRS

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<tr>
<td>DUMMY TYPE:</td>
<td>12 Month Old</td>
<td>DUMMY SERIAL NO.:</td>
<td>062</td>
</tr>
</tbody>
</table>

| CHILD RESTRAINT NAME: | Graco    |
| CHILD RESTRAINT MODEL: | Infant 8457 |
| DATE OF MANUFACTURE: | 8-31-2000 |

Base: _On _X_Off _N/A-Restraint does not have a removable base

Manufacturer's design seat back angle: 3.75° on Headrest Post
Tested seat back angle: 3.9° on Headrest Post
Manufacturer's specified anchorage position: 2 (5 total detents, most upper as 0)
Tested anchorage position: 2 (5 total detents, most upper as 0)

A blanket and visor were not used in the suppression testing because they did not affect the weight sensing system used on the vehicle.

**Test Summary**

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<th>Seat Slide</th>
<th>Cinch Load (N)</th>
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<tbody>
<tr>
<td>Belted</td>
<td>Forward 5 *</td>
<td>129</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Rear</td>
<td>Middle</td>
<td>130</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Facing</td>
<td>Rearward</td>
<td>127</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Unbelted</td>
<td>Forward 6 *</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Rear</td>
<td>Middle</td>
<td>N/A</td>
<td>Suppressed</td>
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<tr>
<td>Facing</td>
<td>Rearward</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Unbelted</td>
<td>Forward</td>
<td>N/A</td>
<td>Suppressed</td>
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<tr>
<td>Forward</td>
<td>Middle</td>
<td>N/A</td>
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</tr>
<tr>
<td>Facing</td>
<td>Rearward</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
</tbody>
</table>

* The CRS would not fit in this Forward Seat Slide position. If there is a number in the Seat Slide column, it indicates the fore-aft detent position with respect to the foremost position. (1 = Full Forward; 22 = Full Rearward; 22 total Seat Slide detents)

Successful Unbelted Representative 5th Percentile Female Reactivation was performed with the seat in the Rearward position. (Human Identification Code 036; 49.0 kg 149.9 cm)
DATA SHEET 17 SUMMARY
Suppression Test Using 12-Month-Old CRABI Dummy (Part 572, Subpart R)
Section C Forward Facing Convertible CRS

<table>
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<tr>
<td>DUMMY TYPE:</td>
<td>12 Month Old</td>
<td>DUMMY SERIAL NO.:</td>
<td>062</td>
</tr>
</tbody>
</table>

CHILD RESTRAINT NAME: Britax
CHILD RESTRAINT MODEL: Roundabout 161
DATE OF MANUFACTURE: 7-21-2000

Base: ___On ___Off ___X N/A-Restraint does not have a removable base

Manufacturer's design seat back angle: 3.75° on Headrest Post
Tested seat back angle: 3.9° on Headrest Post
Manufacturer's specified anchorage position: 2 (5 total detents, most upper as 0)
Tested anchorage position: 2 (5 total detents, most upper as 0)

A blanket was not used in the suppression testing because it did not affect the weight sensing system used on the vehicle.

Test Summary

<table>
<thead>
<tr>
<th>Seat Belt</th>
<th>Seat Slide</th>
<th>Cinch Load (N)</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belted</td>
<td>Forward</td>
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<td>Suppressed</td>
</tr>
<tr>
<td>Forward</td>
<td>Middle</td>
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<tr>
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<td>131</td>
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<tr>
<td>Unbelted</td>
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<td>Suppressed</td>
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<tr>
<td>Forward</td>
<td>Middle</td>
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<td>Facing</td>
<td>Rearward</td>
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<td>Belted</td>
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<td>Rear</td>
<td>Middle</td>
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<tr>
<td>Facing</td>
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Successful Unbelted Representative 5th Percentile Female Reactivation was performed with the seat in the Forward position. (Human Identification Code 036; 49.0 kg 149.9 cm)
DATA SHEET 17 SUMMARY
Suppression Test Using 12-Month-Old CRABI Dummy (Part 572, Subpart R)
Section C Forward Facing Convertible CRS

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<td>DUMMY TYPE:</td>
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<td>DUMMY SERIAL NO.:</td>
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</table>

CHILD RESTRAINT NAME: Century
CHILD RESTRAINT MODEL: Encore 4612
DATE OF MANUFACTURE: 8-16-2000

Base: __On __Off _X N/A-Restraint does not have a removable base

Manufacturer's design seat back angle: 3.75° on Headrest Post
Tested seat back angle: 3.9° on Headrest Post
Manufacturer's specified anchorage position: 2 (5 total detents, most upper as 0)
Tested anchorage position: 2 (5 total detents, most upper as 0)

A blanket was not used in the suppression testing because it did not affect the weight sensing system used on the vehicle.

Test Summary

<table>
<thead>
<tr>
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<th>Seat Slide</th>
<th>Cinch Load (N)</th>
<th>Result</th>
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</thead>
<tbody>
<tr>
<td>Belted</td>
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<tr>
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<td>Suppressed</td>
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Successful Unbelted Representative 5th Percentile Female Reactivation was performed with the seat in the Middle position. (Human Identification Code 036; 49.0 kg 149.9 cm)
DATA SHEET 17 SUMMARY  
Suppression Test Using 12-Month-Old CRABI Dummy (Part 572, Subpart R)  
Section C Forward Facing Convertible CRS

<table>
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<td>DUMMY SERIAL NO.:</td>
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<table>
<thead>
<tr>
<th>CHILD RESTRAINT NAME:</th>
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<tbody>
<tr>
<td>CHILD RESTRAINT MODEL:</td>
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<tr>
<td>DATE OF MANUFACTURE:</td>
<td>6-1-2000</td>
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Base: __On  __Off  _X  N/A-Restraint does not have a removable base

Manufacturer's design seat back angle: 3.75° on Headrest Post  
Tested seat back angle: 3.9° on Headrest Post  
Manufacturer's specified anchorage position: 2 (5 total detents, most upper as 0)  
Tested anchorage position: 2 (5 total detents, most upper as 0)

A blanket was not used in the suppression testing because it did not affect the weight sensing system used on the vehicle.

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<td>Suppressed</td>
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<td>Forward</td>
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<tr>
<td>Facing</td>
<td>Rearward</td>
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</tr>
<tr>
<td>Unbelted</td>
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<td>Suppressed</td>
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<td>Middle</td>
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<td>Rearward</td>
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<td>Belted</td>
<td>Forward</td>
<td>132</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Rear</td>
<td>Middle</td>
<td>130</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Facing</td>
<td>Rearward</td>
<td>129</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Unbelted</td>
<td>Rear</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Rear</td>
<td>Middle</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Facing</td>
<td>Rearward</td>
<td>N/A</td>
<td>Suppressed</td>
</tr>
</tbody>
</table>

Successful Unbelted Representative 5th Percentile Female Reactivation was performed with the seat in the Rearward position. (Human Identification Code 036; 49.0 kg 149.9 cm)
DATA SHEET 18 SUMMARY
Suppression Test Using Newborn Infant Dummy (Part 572, Subpart K)
Section A Car Bed

<table>
<thead>
<tr>
<th>NHTSA NO.</th>
<th>TEST DATE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>C90106</td>
<td>2/16/09</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LABORATORY:</th>
<th>TECHNICIANS:</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGA</td>
<td>WD</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DUMMY TYPE:</th>
<th>DUMMY SERIAL NO.:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newborn Infant</td>
<td>003</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAR BED NAME:</th>
<th>CAR BED MODEL:</th>
<th>DATE OF MANUFACTURE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cosco</td>
<td>Dream Ride 02-719</td>
<td>6-16-2000</td>
</tr>
</tbody>
</table>

Base: _On _Off _X_N/A-Restraint does not have a removable base
(A car bed with a removable base shall be treated as two separate models, i.e. this form and
test procedure will be completed with the base on and then repeated on a new form with the
base off.)

Manufacturer’s design seat back angle: 3.75° on Headrest Post
Tested seat back angle: 3.9° on Headrest Post
Manufacturer’s specified anchorage position: 2 (5 total detents, most upper as 0)
Tested anchorage position: 2 (5 total detents, most upper as 0)

A blanket and visor were not used in the suppression testing because they did not affect the
weight sensing system used on the vehicle.

Test Summary

<table>
<thead>
<tr>
<th>Seat Belt</th>
<th>Seat Slide</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belted</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Forward</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>Suppressed</td>
</tr>
<tr>
<td></td>
<td>Rearward</td>
<td>Suppressed</td>
</tr>
</tbody>
</table>

Successful Unbelted Representative 5th Percentile Female Reactivation was performed with the
seat in the Forward position. (Human Identification Code 036; 49.0 kg 149.9 cm)
Low Risk Deployment Tests Using an Unbelted 3 Year Old Dummy
(Part 572, Subpart P) (S22) Position 1 - Chest On Instrument Panel (S22.4.2)

<table>
<thead>
<tr>
<th>NHTSA NO.:</th>
<th>C90106</th>
<th>TEST DATE:</th>
<th>3/9/09</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABORATORY:</td>
<td>MGA</td>
<td>TECHNICIANS:</td>
<td>BR / AP</td>
</tr>
<tr>
<td>DUMMY TYPE:</td>
<td>3 Year Old</td>
<td>DUMMY SERIAL NO.:</td>
<td>032</td>
</tr>
</tbody>
</table>

Manufacturer’s design seat back angle: 3.75° on Headrest Post
Tested seat back angle: 3.7° on Headrest Post
Tested seat position: Full Aft

Thorax cavity angle: 0.4°
Thigh angle: 48.3°
Point 1 height: 31 mm Below Plane C Air Bag Height

### Air Bag Deployment Timing

<table>
<thead>
<tr>
<th>Stage No.</th>
<th>Firing time (ms)</th>
<th>Recorded firing time (ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>2</td>
<td>40.0</td>
<td>40.2</td>
</tr>
</tbody>
</table>

### 3-Year-Old SN 032 Position 1 (Chest on Instrument Panel) 3/9/09

<table>
<thead>
<tr>
<th>Injury Criteria</th>
<th>Max. Allowable Injury Assessment Values</th>
<th>Measured Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIC15</td>
<td>570</td>
<td>46</td>
</tr>
<tr>
<td>Peak Nij (Nte)</td>
<td>1.0</td>
<td>0.3</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>100.0</td>
</tr>
<tr>
<td>Peak Nij (Ntf)</td>
<td>1.0</td>
<td>0.4</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>11.0</td>
</tr>
<tr>
<td>Peak Nij (Nce)</td>
<td>1.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>47.8</td>
</tr>
<tr>
<td>Peak Nij (Ncf)</td>
<td>1.0</td>
<td>0.3</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>12.3</td>
</tr>
<tr>
<td>Neck Tension</td>
<td>1130 N</td>
<td>317</td>
</tr>
<tr>
<td>Neck Compression</td>
<td>1380 N</td>
<td>295</td>
</tr>
<tr>
<td>Chest g</td>
<td>55 g</td>
<td>15</td>
</tr>
<tr>
<td>Chest Displacement</td>
<td>34 mm</td>
<td>3</td>
</tr>
</tbody>
</table>

Calculated on data recorded for 100 ms after the initial deployment of the air bag. (S4.11(b))

The original equipment parts were used for this deployment.

The windshield cracked during this test.
DATA SHEET 26 SUMMARY
Low Risk Deployment Tests Using an Unbelted 3 Year Old Dummy
(Part 572, Subpart P) (S22) Position 2 - Head On Instrument Panel (S22.4.3)

<table>
<thead>
<tr>
<th>NHTSA NO.:</th>
<th>C90106</th>
<th>TEST DATE:</th>
<th>3/9/09</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABORATORY:</td>
<td>MGA</td>
<td>TECHNICIANS:</td>
<td>BR / AP</td>
</tr>
<tr>
<td>DUMMY TYPE:</td>
<td>3 Year Old</td>
<td>DUMMY SERIAL NO.:</td>
<td>032</td>
</tr>
</tbody>
</table>

Manufacturer's design seat back angle: 3.75° on Headrest Post
Tested seat back angle: 3.7° on Headrest Post
Tested seat position: Full Forward
Thorax cavity angle: 0.0°
Thigh angle: 7.8°

Air Bag Deployment Timing

<table>
<thead>
<tr>
<th>Stage No.</th>
<th>Firing time (ms)</th>
<th>Recorded firing time (ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>2</td>
<td>40.0</td>
<td>40.2</td>
</tr>
</tbody>
</table>

3-Year-Old SN 032 Position 2 (Head on Instrument Panel) 3/9/09

<table>
<thead>
<tr>
<th>Injury Criteria</th>
<th>Max. Allowable Injury Assessment Values</th>
<th>Measured Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIC15</td>
<td>570</td>
<td>22</td>
</tr>
<tr>
<td>Peak Nij (Nte)</td>
<td>1.0</td>
<td>0.1</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>16.4</td>
</tr>
<tr>
<td>Peak Nij (Ntf)</td>
<td>1.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>0.1</td>
</tr>
<tr>
<td>Peak Nij (Nce)</td>
<td>1.0</td>
<td>0.6</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>57.2</td>
</tr>
<tr>
<td>Peak Nij (Ncf)</td>
<td>1.0</td>
<td>0.1</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>8.3</td>
</tr>
<tr>
<td>Neck Tension</td>
<td>1130 N</td>
<td>44</td>
</tr>
<tr>
<td>Neck Compression</td>
<td>1380 N</td>
<td>655</td>
</tr>
<tr>
<td>Chest g</td>
<td>55 g</td>
<td>6</td>
</tr>
<tr>
<td>Chest Displacement</td>
<td>34 mm</td>
<td>0</td>
</tr>
</tbody>
</table>

Calculated on data recorded for 100 ms after the initial deployment of the air bag. (S4.11(b))

A new air bag was used for this deployment. Also, the cracked windshield was not replaced but clear tape sheet was applied to the windshield.
DATA SHEET 27 SUMMARY
Low Risk Deployment Tests Using an Unbelted 6-Year-Old Dummy (Part 572, Subpart N) (S24)
Position 1 – Chest on Instrument Panel (S24.4.2)

<table>
<thead>
<tr>
<th>NHTSA NO.:</th>
<th>C90106</th>
<th>TEST DATE:</th>
<th>3/10/09</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABORATORY:</td>
<td>MGA</td>
<td>TECHNICIANS:</td>
<td>WD</td>
</tr>
<tr>
<td>DUMMY TYPE:</td>
<td>6 Year Old</td>
<td>DUMMY SERIAL NO.:</td>
<td>155</td>
</tr>
</tbody>
</table>

Manufacturer’s design seat back angle: 3.75° on Headrest Post
Tested seat back angle: 3.7° on Headrest Post
Tested seat position: Full Aft
Thorax cavity angle: 6.0°
Point 1 height: 75 mm Above Plane C Air Bag Height

### Air Bag Deployment Timing

<table>
<thead>
<tr>
<th>Stage No.</th>
<th>Firing time (ms)</th>
<th>Recorded firing time (ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>2</td>
<td>40.0</td>
<td>40.2</td>
</tr>
</tbody>
</table>

### 6-Year-Old SN 155 Position 1 (Chest on Instrument Panel) 3/10/09

<table>
<thead>
<tr>
<th>Injury Criteria</th>
<th>Max. Allowable Injury Assessment Values</th>
<th>Measured Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIC15</td>
<td>700</td>
<td>40</td>
</tr>
<tr>
<td>Peak Nij (Nte)</td>
<td>1.0</td>
<td>0.5</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>78.0</td>
</tr>
<tr>
<td>Peak Nij (Ntf)</td>
<td>1.0</td>
<td>0.3</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>8.8</td>
</tr>
<tr>
<td>Peak Nij (Nce)</td>
<td>1.0</td>
<td>0.3</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>49.2</td>
</tr>
<tr>
<td>Peak Nij (Ncf)</td>
<td>1.0</td>
<td>0.1</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>20.5</td>
</tr>
<tr>
<td>Neck Tension</td>
<td>1490 N</td>
<td>721</td>
</tr>
<tr>
<td>Neck Compression</td>
<td>1820 N</td>
<td>240</td>
</tr>
<tr>
<td>Chest g</td>
<td>60 g</td>
<td>8</td>
</tr>
<tr>
<td>Chest Displacement</td>
<td>40 mm</td>
<td>1</td>
</tr>
</tbody>
</table>

Calculated on data recorded for 100 ms after the initial deployment of the air bag. (S4.11(b))

A new air bag and instrument panel cover were used for this deployment.
A new aftermarket replacement windshield was used during this deployment.
DATA SHEET 28 SUMMARY
Low Risk Deployment Tests Using an Unbelted 6 Year Old Dummy
(Part 572, Subpart P) (S24) Position 2 - Head On Instrument Panel (S24.4.3)

NHTSA NO.: C90106  TEST DATE: 3/10/09
LABORATORY: MGA  TECHNICIANS: BR / WD
DUMMY TYPE: 6 Year Old  DUMMY SERIAL NO.: 155

Manufacturer's design seat back angle: 3.75° on Headrest Post
Tested seat back angle: 3.7° on Headrest Post
Tested seat position: Full Forward
Thorax cavity angle: 22.2°
Thigh angle: 8.6°

Air Bag Deployment Timing

<table>
<thead>
<tr>
<th>Stage No.</th>
<th>Firing time (ms)</th>
<th>Recorded firing time (ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>2</td>
<td>40.0</td>
<td>40.2</td>
</tr>
</tbody>
</table>

6-Year-Old SN 155 Position 2 (Head on Instrument Panel) 3/10/09

<table>
<thead>
<tr>
<th>Injury Criteria</th>
<th>Max. Allowable Injury Assessment Values</th>
<th>Measured Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIC15</td>
<td>700</td>
<td>25</td>
</tr>
<tr>
<td>Peak Nij (Nte)</td>
<td>1.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>16.9</td>
</tr>
<tr>
<td>Peak Nij (Ntf)</td>
<td>1.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>0.1</td>
</tr>
<tr>
<td>Peak Nij (Nce)</td>
<td>1.0</td>
<td>0.4</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>55.1</td>
</tr>
<tr>
<td>Peak Nij (Ncf)</td>
<td>1.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>6.7</td>
</tr>
<tr>
<td>Neck Tension</td>
<td>1490 N</td>
<td>188</td>
</tr>
<tr>
<td>Neck Compression</td>
<td>1820 N</td>
<td>914</td>
</tr>
<tr>
<td>Chest g</td>
<td>60 g</td>
<td>7</td>
</tr>
<tr>
<td>Chest Displacement</td>
<td>40 mm</td>
<td>0</td>
</tr>
</tbody>
</table>

Calculated on data recorded for 100 ms after the initial deployment of the air bag. (S4.11(b))

A new air bag was used for this deployment. Also, the cracked windshield was not replaced but clear tape sheet was applied to the windshield.
**DATA SHEET 29 SUMMARY**

Low Risk Deployment Tests Using an Unbelted 5th Percentile Female Dummy (Part 572, Subpart O) (S26) Position 1 - Chin On Module (S26.2)

<table>
<thead>
<tr>
<th>NHTSA NO.:</th>
<th>C90106</th>
<th>TEST DATE:</th>
<th>3/9/09</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABORATORY:</td>
<td>MGA</td>
<td>TECHNICIANS:</td>
<td>JL / WD</td>
</tr>
<tr>
<td>DUMMY TYPE:</td>
<td>5th Percentile Female</td>
<td>DUMMY SERIAL NO.:</td>
<td>507</td>
</tr>
</tbody>
</table>

Manufacturer's design seat back angle: 3.75° on Headrest Post
Tested seat back angle: 3.7° on Headrest Post
Tested seat position: Full Aft
Tested steering wheel angle: 20.3°
Thorax cavity angle: 26.2°
Bottom of chin height: 0 mm - At Plane F Module Height

### Air Bag Deployment Timing

<table>
<thead>
<tr>
<th>Stage No.</th>
<th>Firing time (ms)</th>
<th>Recorded firing time (ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>2</td>
<td>100.0</td>
<td>100.3</td>
</tr>
</tbody>
</table>

### 5th Percentile Female SN 507 Position 1 (Chin On Module) 3/9/09

<table>
<thead>
<tr>
<th>Injury Criteria</th>
<th>Max. Allowable Injury Assessment Values</th>
<th>Measured Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIC15</td>
<td>700</td>
<td>9</td>
</tr>
<tr>
<td>Peak Nij (Nte)</td>
<td>1.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>102.9</td>
</tr>
<tr>
<td>Peak Nij (Ntf)</td>
<td>1.0</td>
<td>0.3</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>39.2</td>
</tr>
<tr>
<td>Peak Nij (Nce)</td>
<td>1.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>0.9</td>
</tr>
<tr>
<td>Peak Nij (Ncf)</td>
<td>1.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>13.5</td>
</tr>
<tr>
<td>Neck Tension</td>
<td>2070 N</td>
<td>324</td>
</tr>
<tr>
<td>Neck Compression</td>
<td>2520 N</td>
<td>120</td>
</tr>
<tr>
<td>Chest g</td>
<td>60 g</td>
<td>9</td>
</tr>
<tr>
<td>Chest Displacement</td>
<td>52 mm</td>
<td>6</td>
</tr>
<tr>
<td>Left Femur</td>
<td>6805 N</td>
<td>57</td>
</tr>
<tr>
<td>Right Femur</td>
<td>6805 N</td>
<td>68</td>
</tr>
</tbody>
</table>

Calculated on data recorded for 125 ms after the initiation of the final stage of air bag deployment designed to deploy in any full frontal rigid barrier crash up to 26 km/h. (S4.11(d)) Second stage fire time of 100 ms; Injuries calculated on 0 ms to 225 ms

The original equipment parts were used for this deployment.
DATA SHEET 30 SUMMARY
Low Risk Deployment Tests Using an Unbelted 5th Percentile Female Dummy (Part 572, Subpart O) (S26) Position 2 - Chin On Rim (S26.3)

<table>
<thead>
<tr>
<th>NHTSA NO.:</th>
<th>C90106</th>
<th>TEST DATE:</th>
<th>3/9/09</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABORATORY:</td>
<td>MGA</td>
<td>TECHNICIANS:</td>
<td>WD / AP</td>
</tr>
<tr>
<td>DUMMY TYPE:</td>
<td>5th Percentile Female</td>
<td>DUMMY SERIAL NO.:</td>
<td>507</td>
</tr>
</tbody>
</table>

Manufacturer’s design seat back angle: 3.75° on Headrest Post
Tested seat back angle: 3.7° on Headrest Post
Tested seat position: Full Aft

Tested steering wheel angle: 18.7°
Thorax cavity angle: 24.7°
Chin Point height: 7 mm - Below Steering Wheel Target
Note: The chin on rim steering wheel target is 10 mm below the highest point on the steering wheel.

Air Bag Deployment Timing

<table>
<thead>
<tr>
<th>Stage No.</th>
<th>Firing time (ms)</th>
<th>Recorded firing time (ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>2</td>
<td>100.0</td>
<td>100.2</td>
</tr>
</tbody>
</table>

5th Percentile Female SN 507 Position 2 (Chin On Rim) 3/9/09

<table>
<thead>
<tr>
<th>Injury Criteria</th>
<th>Max. Allowable Injury Assessment Values</th>
<th>Measured Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIC15</td>
<td>700</td>
<td>3</td>
</tr>
<tr>
<td>Peak Nij (Nte)</td>
<td>1.0</td>
<td>0.3</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>16.2</td>
</tr>
<tr>
<td>Peak Nij (Ntf)</td>
<td>1.0</td>
<td>0.1</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>75.9</td>
</tr>
<tr>
<td>Peak Nij (Nce)</td>
<td>1.0</td>
<td>0.1</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>164.9</td>
</tr>
<tr>
<td>Peak Nij (Ncf)</td>
<td>1.0</td>
<td>0.1</td>
</tr>
<tr>
<td>Time (ms)</td>
<td>NA</td>
<td>86.8</td>
</tr>
<tr>
<td>Neck Tension</td>
<td>2070 N</td>
<td>433</td>
</tr>
<tr>
<td>Neck Compression</td>
<td>2520 N</td>
<td>75</td>
</tr>
<tr>
<td>Chest g</td>
<td>60 g</td>
<td>16</td>
</tr>
<tr>
<td>Chest Displacement</td>
<td>52 mm</td>
<td>11</td>
</tr>
<tr>
<td>Left Femur</td>
<td>6805 N</td>
<td>23</td>
</tr>
<tr>
<td>Right Femur</td>
<td>6805 N</td>
<td>15</td>
</tr>
</tbody>
</table>

Calculated on data recorded for 125 ms after the initiation of the final stage of air bag deployment designed to deploy in any full frontal rigid barrier crash up to 26 km/h. (S4.11(d))
Second stage fire time of 100 ms; Injuries calculated on 0 ms to 225 ms

A new air bag and original equipment steering wheel and steering column were used for this deployment.
DATA SHEET 32

VEHICLE WEIGHT, FUEL TANK, AND ATTITUDE DATA

Test Vehicle: 2009 Chevrolet Cobalt  
Test Program: FMVSS 208 Compliance  
Test Technician: Jamie Aide  
NHTSA No.: C90106  
Test Date: 3/31/09

<table>
<thead>
<tr>
<th>IMPACT ANGLE:</th>
<th>Zero Degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td>BELTED DUMMIES (YES/NO):</td>
<td>No</td>
</tr>
</tbody>
</table>
| TEST SPEED: | X 32 to 40 kmph  
0 to 48 kmph  
0 to 56 kmph |
| DRIVER DUMMY: | X 5th female  
50th male |
| PASSENGER DUMMY: | X 5th female  
50th male |

1. Fill the transmission with transmission fluid to the satisfactory range.
2. Drain fuel from vehicle.
3. Run the engine until fuel remaining in the fuel delivery system is used and the engine stops.
4. Record the usable fuel tank capacity supplied by the COTR.
   Useable Fuel Tank Capacity supplied by COTR: 49.8 liters (13.17 gallons)
5. Record the fuel tank capacity supplied in the owner’s manual.
   Useable Fuel Tank Capacity in owner’s manual: 49.8 liters (13.17 gallons)
6. Using purple dyed Stoddard solvent having the physical and chemical properties of Type 1 solvent or cleaning fluid, Table 1, ASTM Standard D484-71, “Standard Specifications for Hydrocarbon Dry-cleaning Solvents,” or gasoline, fill the fuel tank.
   Amount Added: 49.8 liters (13.17 gallons)
7. Fill the coolant system to capacity.
8. Fill the engine with motor oil to the Max. mark on the dip stick.
9. Fill the brake reservoir with brake fluid to its normal level.
10. Fill the windshield washer reservoir to capacity.
11. Inflate the tires to the tire pressure on the tire placard. If no tire placard is available, inflate the tires to the recommended pressure in the owner’s manual.
   - Tire placard pressure: RF: 33 psi  
   LF: 33 psi  
   RR: 33 psi  
   LR: 33 psi
   - Owner’s manual pressure: RF: 33 psi  
   LF: 33 psi  
   RR: 33 psi  
   LR: 33 psi
   - Actual inflated pressure: RF: 33 psi  
   LF: 33 psi  
   RR: 33 psi  
   LR: 33 psi
12. Record the vehicle weight at each wheel to determine the unloaded vehicle weight (UVW), i.e. "as delivered" weight.
   - Right Front (kg): 374.2  
   Right Rear (kg): 256.3
   - Left Front (kg): 377.8  
   Left Rear (kg): 259.5
   - Total Front (kg): 752.0  
   Total Rear (kg): 515.8
   - % Total Weight: 59.3  
   % Total Weight: 40.7
   - UVW = TOTAL FRONT PLUS TOTAL REAR (KG): 1267.8
13. UVW Test Vehicle Attitude: (All dimensions in millimeters)
   - Mark a point on the vehicle above the center of each wheel.
   - Place the vehicle on a level surface.
   - Measure perpendicular to the level surface to the 4 points marked on the body and record the measurements
   - RF: 685  
   LF: 682  
   RR: 698  
   LR: 693
14. Calculate the Rated Cargo and Luggage Weight (RCLW): 64 kg
   14.1 Does the vehicle have the vehicle capacity weight (VCW) on the certification label or tire placard?
   - Yes, go to 14.3
   - No, go to 14.2
   14.2 VCW = Gross Vehicle Weight - UVW
   \[
   VCW = \text{________} - \text{________} = \text{________}
   \]
   14.3 VCW = 404 kg (891 lbs)
   14.4 Does the certification or tire placard contain the Designated Seating Capacity (DSC)?
   - Yes, go to 14.6
   - No, go to 14.5 and skip 14.6
   14.5 DSC = Total number of seat belt assemblies = \text{________}
   14.6 DSC = 5
   14.7 RCLW = VCW - (68 kg x DSC) = 404 kg - (68 kg x 5) = 64 kg
   14.8 Is the vehicle certified as a truck, MPV or bus (see the certification label on the door jamb)?
   - Yes, if the calculated RCLW is greater than 136 kg, use 136 kg as the RCLW. (S8.1.1)
   - No, use the RCLW calculated in 14.7
   15. Fully Loaded Weight (100% fuel fill): 1429.7 kg
   15.1 Place the appropriate test dummy in both front outboard seating positions.
   - Driver: X 5th female __ 50th male
   - Passenger: X 5th female __ 50th male
   15.2 Load the vehicle with the RCLW from 14.7 or 14.8 whichever is applicable.
   15.3 Place the RCLW in the cargo area. Center the load over the longitudinal centerline of the vehicle. (S8.1.1 (d))
   15.4 Record the vehicle weight at each wheel to determine the Fully Loaded Weight.
   \[
   \begin{array}{c|c|c}
   \text{Right Front (kg):} & 396.4 & \text{Right Rear (kg):} & 316.6 \\
   \text{Left Front (kg):} & 397.4 & \text{Left Rear (kg):} & 319.3 \\
   \text{Total Front (kg):} & 793.8 & \text{Total Rear (kg):} & 635.9 \\
   \text{\% Total Weight:} & 55.5 & \text{\% Total Weight:} & 44.5 \\
   \text{\% GVW} & 51.4 & \text{\% GVW} & 48.8 \\
   \end{array}
   \]
   \[
   \text{Fully Loaded Weight = Total Front Plus Total Rear (kg):} & 1429.7
   \]
   16. Fully Loaded Test Vehicle Attitude: (All dimensions in millimeters)
   16.1 Place the vehicle on a level surface.
   16.2 Measure perpendicular to the level surface to the 4 points marked on the body (see 13.1 above) and record the measurements.
   \[
   \begin{array}{c|c|c|c|c|c|c}
   \text{RF:} & 674 & \text{LF:} & 668 & \text{RR:} & 670 & \text{LR:} & 665 \\
   \end{array}
   \]
   17. Drain the fuel system
   18. Using purple dyed Stoddard solvent having the physical and chemical properties of Type 1 solvent or cleaning fluid, Table 1, ASTM Standard D484-71, “Standard Specifications for Hydrocarbon Dry-cleaning Solvents,” fill the fuel tank to 92 - 94 percent of useable capacity.
   \[
   \text{Fuel tank capacity x .94 = 49.8 liters (13.17 gallons) x .94 = 46.9 liters (12.4 gallons)}
   \]
   \[
   \text{Amount added: 46.4 liters (12.25 gallons) 93.0}\%
   \]
19. Crank the engine to fill the fuel delivery system with Stoddard solvent.
20. Calculate the test weight range.
   20.1 Calculated Weight = UVW (see 12 above) + RCLW (see 14 above) + 2x(dummy weight)
      \[ 1429.8 \text{ kg} = 1267.8 \text{ kg} + 64.0 \text{ kg} + 98.0 \text{ kg} \]
   20.2 Test Weight Range = Calculated Weight (- 4.5 kg, - 9 kg)
      Max. Test Weight = Calculated Test Weight - 4.5 kg = 1425.3 kg
      Min. Test Weight = Calculated Test Weight - 9 kg = 1420.8 kg
21. Remove the RCLW from the cargo area.
22. Drain transmission fluid, engine coolant, motor oil, and windshield washer fluid from the test vehicle so that Stoddard solvent leakage from the fuel system will be evident.
23. Vehicle Components Removed For Weight Reduction:
    Spare tire, jack and tools, and trunk interior
24. Secure the equipment and ballast in the load carrying area and distribute it, as nearly as possible, to obtain the proportion of axle weight indicated by the gross axle weight ratings and center it over the longitudinal centerline of the vehicle.
25. If necessary, add ballast to achieve the actual test weight.
   N/A
   Weight of Ballast: 22.7 kg
26. Ballast, including test equipment, must be contained so that it will not shift during the impact event or interfere with data collection or interfere with high-speed film recordings or affect the structural integrity of the vehicle or do anything else to affect test results. Care must be taken to assure that any attachment hardware added to the vehicle is not in the vicinity of the fuel tank or lines.
27. Record the vehicle weight at each wheel to determine the actual test weight.
   Right Front (kg): 402.3  Right Rear (kg): 307.5
   Left Front (kg): 403.3  Left Rear (kg): 310.7
   Total Front (kg): 805.6  Total Rear (kg): 618.2
   % Total Weight: 56.6  % Total Weight: 43.4
   % GVW: 51.4  % GVW: 48.8
   (% GVW = Axle GVW divided by Vehicle GVW)
   TOTAL FRONT PLUS TOTAL REAR (kg): 1423.8
28. Is the test weight between the Max. Weight and the Min. Weight (See 20.2)?
   Yes
   No, explain why not.
29. Test Weight Vehicle Attitude: (all dimensions in millimeters)
   29.1 Place the vehicle on a level surface
   29.2 Measure perpendicular to the level surface to the 4 points marked on the body (see 13 above) and record the measurements
      RF: 675  LF: 668  RR: 676  LR: 670
30. Summary of test attitude
<table>
<thead>
<tr>
<th>30.1 AS DELIVERED:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>RF: 685</td>
<td>LF: 682</td>
</tr>
</tbody>
</table>

| 30.1 AS TESTED: |
|------------------|---|
| RF: 675 | LF: 668 | RR: 676 | LR: 670 |

| 30.1 FULLY LOADED: |
|--------------------|---|
| RF: 674 | LF: 668 | RR: 670 | LR: 665 |

<table>
<thead>
<tr>
<th>30.2 Is the “as tested” test attitude equal to or between the “fully loaded” and “as delivered” attitude?</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No, explain why not.</td>
</tr>
</tbody>
</table>

**REMARKS:**

Signature: __________________ Date: 3/31/09

I certify that I have read and performed each instruction.
DATA SHEET 33

VEHICLE ACCELEROMETER LOCATION AND MEASUREMENT

Test Vehicle: 2009 Chevrolet Cobalt
Test Program: FMVSS 208 Compliance
Test Technician: Jamie Aide
NHTSA No.: C90106
Test Date: 3/31/09

IMPACT ANGLE: Zero Degrees
BELTED DUMMIES (YES/NO): No
TEST SPEED: X 32 to 40 kmph ___ 0 to 48 kmph ___ 0 to 56 kmph
DRIVER DUMMY: X 5th female ___ 50th male
PASSENGER DUMMY: X 5th female ___ 50th male

1. Find the location where the vertical plane parallel to the longitudinal centerline of the vehicle and through the center of the left front outboard seating position intersects the left rear seat cross member. Install an accelerometer at this intersection on the rear seat cross member to record x-direction accelerations. Record the location on the following chart.

2. Find the location where the vertical plane parallel to the longitudinal centerline of the vehicle and through the center of the right front outboard seating position intersects the right rear seat cross member. Install an accelerometer at this intersection on the rear seat cross member to record x-direction accelerations. Record the location on the following chart.

3. Find the location where a vertical plane through the longitudinal centerline of the vehicle and a vertical transverse plane through the center of the two wheels on opposite sides of the engine intersect at the top of the engine. Install an accelerometer at this intersection to record x-direction accelerations. Record the location on the following chart.

4. Find the location where a vertical plane through the longitudinal centerline of the vehicle and a vertical transverse plane through the center of the two wheels on opposite sides of the engine intersect the bottom of the engine. Install an accelerometer at this intersection to record x-direction accelerations. Record the location on the following chart.

5. Install an accelerometer on the right front brake caliper to record x-direction accelerations. Record the location on the following chart.

6. Find the location where a vertical plane through the longitudinal centerline of the vehicle intersects the top of the instrument panel. Install an accelerometer at this intersection to record x-direction accelerations. Record the location on the following chart.

7. Install an accelerometer on the left front brake caliper to record x-direction accelerations. Record the location on the following chart.

8. Find the location where a vertical plane through the longitudinal centerline of the vehicle intersects the floor of the trunk. Install an accelerometer on the trunk floor at this intersection to record z-direction accelerations. Record the location on the following chart.

REMARKS:

I certify that I have read and performed each instruction.

Signature: ____________________ Date: 3/31/09
Dimensions Corresponding To The Letters “A” Through “K” (Excluding “I”) Are Recorded In The Table On The Following Page. Accelerometers Corresponding To The Numbers 1 Through 8 Are Specified On The Preceding Page.
### DATA SHEET 33

VEHICLE ACCELEROMETER LOCATION AND MEASUREMENTS

<table>
<thead>
<tr>
<th>DIMENSION</th>
<th>LENGTH (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PRETEST VALUES</strong></td>
<td></td>
</tr>
<tr>
<td>A (LH Rear Seat Xmbr)</td>
<td>275</td>
</tr>
<tr>
<td>B (RH Rear Seat Xmbr)</td>
<td>273</td>
</tr>
<tr>
<td>C (Engine Top)</td>
<td>3775</td>
</tr>
<tr>
<td>D (Engine Bottom)</td>
<td>3808</td>
</tr>
<tr>
<td>E (Caliper)</td>
<td>Right Side: 3695</td>
</tr>
<tr>
<td>F (Left Caliper)</td>
<td>652</td>
</tr>
<tr>
<td>G (IP)</td>
<td>2963</td>
</tr>
<tr>
<td>H (Seat)</td>
<td>1783</td>
</tr>
<tr>
<td>J (Right Caliper)</td>
<td>652</td>
</tr>
<tr>
<td>K (Trunk)</td>
<td>452</td>
</tr>
<tr>
<td><strong>POST TEST VALUES</strong></td>
<td></td>
</tr>
<tr>
<td>A (LH Rear Seat Xmbr)</td>
<td>275</td>
</tr>
<tr>
<td>B (RH Rear Seat Xmbr)</td>
<td>273</td>
</tr>
<tr>
<td>C (Engine Top)</td>
<td>3719</td>
</tr>
<tr>
<td>D (Engine Bottom)</td>
<td>3742</td>
</tr>
<tr>
<td>E (Caliper)</td>
<td>Right Side: 3660</td>
</tr>
<tr>
<td>F (Left Caliper)</td>
<td>654</td>
</tr>
<tr>
<td>G (IP)</td>
<td>2963</td>
</tr>
<tr>
<td>H (Seat)</td>
<td>652</td>
</tr>
<tr>
<td>J (Right Caliper)</td>
<td>655</td>
</tr>
<tr>
<td>K (Trunk)</td>
<td>452</td>
</tr>
</tbody>
</table>
DATA SHEET 34
PHOTOGRAPHIC TARGETS

Test Vehicle: 2009 Chevrolet Cobalt
Test Program: FMVSS 208 Compliance
Test Technician: Jamie Aide

| IMPACT ANGLE: | Zero Degrees |
| BELTED DUMMIES (YES/NO): | No |
| TEST SPEED: | X 32 to 40 kmph | 0 to 48 kmph | 0 to 56 kmph |
| DRIVER DUMMY: | X 5th female | 50th male |
| PASSENGER DUMMY: | X 5th female | 50th male |

1. **FMVSS 208 vehicle targeting requirements** (See Figures 28A and 28B)
   1.1 Targets A1 and A2 are on flat rectangular panels.
   1.2 Three circular targets at least 90 mm in diameter and with black and yellow quadrants are mounted at the front on the outboard sides of A1 and A2. The center of each circular target is 100 mm from the one next to it.
   Distance between targets (mm): 100 mm
   1.3 Three circular targets at least 90 mm in diameter and with black and yellow quadrants are mounted at the back on the outboard sides of on A1 and A2. The center of each circular target is 100 mm from the one next to it.
   Distance between targets (mm): 100 mm
   1.4 The distance between the first circular target at the front of A1 and A2 and the last circular target at the back of A1 and A2 is at least 915 mm.
   Distance between the first and last circular targets (mm): 920 mm
   1.5 Firmly fix target A1 on the vehicle roof in the vertical longitudinal plane that is coincident with the midsagittal plane of the driver dummy.
   1.6 Firmly fix target A2 on the vehicle roof in the vertical longitudinal plane that is coincident with the midsagittal plane of the passenger dummy.
   1.7 Two circular targets (C1 and C2) at least 90 mm in diameter and with black and yellow quadrants are mounted on the outside of the driver door. The centers of each circular target are at least 610 mm apart.
   Distance between targets (mm): 613 mm
   1.8 Two circular targets (C1 and C2) at least 90 mm in diameter and with black and yellow quadrants are mounted on the outside of the passenger door. The centers of each circular target are at least 610 mm apart.
   Distance between targets (mm): 612 mm
   1.9 Place tape with squares having alternating colors on the top portion of the steering wheel.
   1.10 Chalk the bottom portion of the steering wheel.
   1.11 Is this an offset test?
   | Yes, continue with this section |
   | No, go to 2. |
   1.12 Measure the width of the vehicle.
   Vehicle width (mm): 
   1.13 Find the centerline of the vehicle. (½ of the vehicle width)
   1.14 Find the line parallel to the centerline of the vehicle and 0.1 x vehicle width from the centerline of the vehicle.
Apply 25 mm wide tape with alternating black and yellow squares parallel to and on each side of the line found in 1.14. The edge of each tape shall be 50 mm from the line found in 1.14. The tape shall extend from the bottom of the bumper to the front edge of the windshield. (Figure 28D)

Barrier Targeting

2.1 Fix two stationary targets D1 and D2 to the barrier as shown in the Figure 28A. One target is in the vertical longitudinal plane that is coincident with the midsagittal plane of the driver dummy. The other is in the vertical longitudinal plane that is coincident with the midsagittal plane of the passenger dummy.

2.2 Targets D1 and D2 are on a rectangular panel.

2.3 Three circular targets at least 90 mm in diameter and with black and yellow quadrants are mounted on the sides of the rectangular panel away from the longitudinal centerline of the vehicle. The center of each circular target is 100 mm from the one next to it.

Distance between circular targets on D1 (mm): 100 mm
Distance between circular targets on D2 (mm): 100 mm

FMVSS 208 Dummy Targeting Requirements

3.1 Place a circular target with black and yellow quadrants on both sides of the driver dummy head as close as possible to the center of gravity of the head in the x and z direction (relative to the measuring directions of the accelerometers).

3.2 Place a circular target with black and yellow quadrants on both sides of the passenger dummy head as close as possible to the center of gravity of the head in the x and z direction (relative to the measuring directions of the accelerometers).

3.3 Place a circular target with black and yellow quadrants on the outboard shoulder of the driver dummy. Place the target as high up on the arm as possible at the intersection of the arm and shoulder. The sleeve of the shirt on the dummy may be cut to make the target visible, but do not remove any material.

3.4 Place a circular target with black and yellow quadrants on the outboard shoulder of the passenger dummy. Place the target as high up on the arm as possible at the intersection of the arm and shoulder. The sleeve of the shirt on the dummy may be cut to make the target visible, but do not remove any material.

FMVSS 204 Targeting Requirements

4.1 Is an FMVSS 204 indicant test ordered on the “COTR Vehicle Work Order?”

☐ Yes, continue with this form.
☒ No, this form is complete.

4.2 Reection panel (Figure 28C)

4.2.1 The panel deviates no more than 6 mm from perfect flatness when suspended vertically.

4.2.2 The 8 targets on the panel are circular targets at least 90 mm in diameter and with black and yellow quadrants.

4.2.3 The center of each of the 4 outer targets are placed within 1 mm of the corners of a square measuring 914 mm on each side.

4.2.4 Locate another square with 228 mm sides and with the center of this square coincident with the center of the 914 mm square.

4.2.5 The center of the 4 inner targets are placed at the midpoints of each of the 228 mm sides.

4.3 Place a circular target at least 90 mm in diameter and with black and yellow quadrants on a material (cardboard, metal, etc.) that can be taped to the top of the steering column.

4.4 Tape the target from 4.3 to the top of the steering column in a manner that does not interfere with the movement of the steering column in a crash.

REMARKS:

Signature: _________________________ Date: 3/31/09

I certify that I have read and performed each instruction.
REFERENCE PHOTO TARGETS

CONCRETE BARRIER

915 mm

100 mm

100 mm

610 mm

MONORAIL

COVERED PHOTO PIT

LEFT SIDE VIEW
RESECTION PANEL TARGETING ALIGNMENT

RESECTION CONTROL POINTS PANEL

STEERING COLUMN TARGET B

A1 A2

CAR TOP TARGETS A1 & A2

STEERING WHEEL

TEST RUN STEERING COLUMN CAMERA VIEW OF TYPICAL TIME ZERO VEHICLE POSITION

LEFT SIDE VIEW
PRE-RUN STEERING COLUMN HIGH SPEED CAMERA VIEW

LEFT SIDE VIEW
# DATA SHEET 35
## CAMERA LOCATIONS

**Test Vehicle:** 2009 Chevrolet Cobalt  
**NHTSA No.:** C90106  
**Test Program:** FMVSS 208 Compliance  
**Test Date:** 3/31/09  
**Time:** 9:26 am

<table>
<thead>
<tr>
<th>CAMERA NO.</th>
<th>VIEW</th>
<th>CAMERA POSITIONS (mm) *</th>
<th>LENS (mm)</th>
<th>SPEED (fps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Real Time Left Side View</td>
<td>X: 13</td>
<td>Y: 24</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Left Side View (Barrier face to front seat backs)</td>
<td>1125</td>
<td>-5010</td>
<td>1115</td>
</tr>
<tr>
<td>3</td>
<td>Left Side View (Driver)</td>
<td>1030</td>
<td>-5920</td>
<td>1525</td>
</tr>
<tr>
<td>4</td>
<td>Left Side View (B-post aimed toward center of steering wheel)</td>
<td>6710</td>
<td>-4825</td>
<td>2005</td>
</tr>
<tr>
<td>5</td>
<td>Left Side View (Steering Column)</td>
<td>720</td>
<td>-5015</td>
<td>1220</td>
</tr>
<tr>
<td>6</td>
<td>Left Side View (Steering Column)</td>
<td>720</td>
<td>-5000</td>
<td>815</td>
</tr>
<tr>
<td>7</td>
<td>Right Side View (Overall)</td>
<td>2515</td>
<td>6210</td>
<td>1110</td>
</tr>
<tr>
<td>8</td>
<td>Right Side View (Passenger)</td>
<td>1320</td>
<td>5615</td>
<td>1510</td>
</tr>
<tr>
<td>9</td>
<td>Right Side View (Angle)</td>
<td>6420</td>
<td>4700</td>
<td>2015</td>
</tr>
<tr>
<td>10</td>
<td>Right Side View (Front door)</td>
<td>1125</td>
<td>5025</td>
<td>1215</td>
</tr>
<tr>
<td>11</td>
<td>Front View Windshield</td>
<td>-285</td>
<td>0</td>
<td>2860</td>
</tr>
<tr>
<td>12</td>
<td>Front View Driver</td>
<td>-135</td>
<td>-470</td>
<td>2180</td>
</tr>
<tr>
<td>13</td>
<td>Front View Passenger</td>
<td>-110</td>
<td>420</td>
<td>2180</td>
</tr>
<tr>
<td>14</td>
<td>Overhead Barrier Impact View</td>
<td>1660</td>
<td>0</td>
<td>5050</td>
</tr>
<tr>
<td>15</td>
<td>Pit Camera Engine View</td>
<td>1110</td>
<td>0</td>
<td>-3150</td>
</tr>
<tr>
<td>16</td>
<td>Pit Camera Fuel Tank View</td>
<td>2605</td>
<td>0</td>
<td>-3150</td>
</tr>
</tbody>
</table>

*COORDINATES:  
+X - forward of impact plane  
+Y - right of monorail centerline  
+Z - above ground level
### Seating Procedure 5th Percentile Female Driver Dummy (Part 572, Subpart O) (S16.2-S16.3)

1. **Seat Position**

   - **1.1** Position the seat’s adjustable lumbar supports so that the lumbar supports are in the lowest, retracted or deflated adjustment positions. (S16.2.10.1, S20.1.9.1, S20.4.1, S22.1.7.1)
   - **X** N/A – No lumbar adjustment

   - **1.2** Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2, S20.1.9.2, S20.4.1, S22.1.7.1, S22.4.2.1, S22.4.3.1, S24.4.2.1, S26.2.3, S26.3.1)
   - **X** N/A – No additional support adjustment

   - **1.3** Position an adjustable leg support system in its rearmost position. (8/27/04 interpretation to Toyota)
   - **X** N/A – No adjustable leg support system

   - **1.4** **Mark** a point (seat cushion reference point) on the side of the seat cushion that is between 150 mm and 250 mm from the front edge of the seat cushion. (S16.3.1.12)

   - **1.5** Draw a line (seat cushion reference line) through the seat cushion reference point. (S16.3.1.13)

   - **1.6** Use only the controls that primarily move the seat in the fore-aft direction to move the seat cushion reference point to the rearmost position. (S16.2.10.3.1, S22.1.7.3)

   - **1.7** If the seat cushion adjusts fore-aft, independent of the seat back, use only the controls that primarily move the seat cushion in the fore-aft direction to move the seat cushion reference point to the rearmost position. (S16.2.10.3.1, S20.1.9.3)
   - **X** N/A – No independent fore-aft seat cushion adjustment

   - **1.8** Use any part of any control, other than the parts just used for fore-aft positioning, to determine the range of angles of the seat cushion reference line and to set the seat cushion reference line at the mid-angle. (S16.2.10.3.1)

     - Maximum angle **2.6° Nose Down**
     - Minimum angle **0.0°**
     - Mid-angle **1.3° Nose Down**
_1.9 If the seat and/or seat cushion height is adjustable, use any part of any control other than the parts which primarily move the seat or seat cushion fore-aft, to put the seat cushion reference point in its lowest position with the seat cushion reference line angle at the mid-angle found in 1.8. (S16.2.10.3.1)

N/A – No seat height adjustment

_1.10 Use only the controls that primarily move the seat in the fore-aft direction to verify the seat is in the rearmost position.

_1.11 Use only the controls that primarily move the seat in the fore-aft direction to mark the fore-aft seat positions. Mark each position so that there is a visual indication when the seat is at a particular position. For manual seats, move the seat forward one detent at a time and mark each detent. For power seats, mark only the rearmost, middle, and foremost positions. Label three of the positions with the following: F for foremost, M for mid-position (if there is no mid-position, label the closest adjustment position to the rear of the mid-point), and R for rearmost.

_1.12 Use only the controls that primarily move the seat in the fore-aft direction to place the seat in the rearmost position.

_1.13 Use any part of any control, other than the parts which primarily move the seat or seat cushion fore-aft, to find and visually mark the maximum, minimum, and middle height of the seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1, S24.4.3.1, S26.2.3, S26.3.1)

N/A – No seat height adjustment. Go to 1.18

_1.14 Use only the controls that primarily move the seat and/or seat cushion in the fore-aft direction to place the seat in the mid-fore-aft position.

_1.15 Use any part of any control, other than the parts which primarily move the seat or seat cushion fore-aft, to find and visually mark the maximum, minimum, and middle height of the seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)

_1.16 Use only the control that change the seat in the fore-aft direction to place the seat in the foremost position. (S16.2.10.3.2)

_1.17 Use any part of any control, other than the parts which primarily move the seat or seat cushion fore-aft, to find and visually mark the maximum, minimum, and middle height of the seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S16.2.10.3.3, S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)

_1.18 Is the seat a bucket seat?

Yes, go to 1.19 and skip 1.20

No, go to 1.20 and skip 1.19

_1.19 Bucket seats:

Locate and mark for future reference the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S16.3.1.10 & S20.1.10)
1.20 Bench seats (complete ONLY the one that is applicable to the seat being marked):
   Locate and mark for future reference the longitudinal line on the seat cushion that marks
   the intersection of the vertical longitudinal plane through the centerline of the steering
   wheel and the seat cushion upper surface.

2. Head Restraint Position
   __N/A Vehicle contains automatic head restraints.
   __N/A, there is no head restraint adjustment
   X 2.1 Adjust the head restraint to its lowest position. (S16.2.10.2, S20.1.9.6 S20.4.1,
      S22.1.7.6, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
   X 2.2 All adjustments of the head restraint shall be used to position it full forward. For
      example, if it rotates, rotate it such that the head restraint extends as far forward as
      possible. Mark the foremost position. (S16.2.10.2 & S16.3.4.4 & S20.1.9.6, S20.4.1,
      S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
   X 2.3 Measure the vertical distance from the top most point of the head restraint to the
      bottom most point. Locate and mark a horizontal plane through the midpoint of this
      distance. (S16.3.4.3)
      Vertical height of head restraint _180_ mm
      Mid-point height _90_ mm

3. Is the steering wheel adjustable up and down and/or in and out?
   X  Yes – go to 3.1
   __ No – Go to 4
   X 3.1. Find and mark for future reference each up and down position. Label three of the
      positions with the following: H for highest, M for mid-position (if there is no mid-
      position, label the next lowest adjustment position), and L for lowest.
      __N/A – steering wheel is not adjustable up and down
   X 3.2. Find and mark for future references each in and out position. Label three of the
      Positions with the following: F for foremost, M for mid-position (if there is no mid-
      position, label the next rearmost adjustment position), and R for rearmost.
      X  N/A – steering wheel is not adjustable in and out.
   X 3.3. Use the markings to position the steering controls in the mid-position or if
      applicable next lowest detent position. (S16.2.9)

4. Place the SCRP in the full rearward, mid-height position, and mid-seat cushion angle,
   determined in Item 1. (S16.3.2.1.1)

5. If the vehicle has an adjustable accelerator pedal, place it in the full forward position.
   (S16.3.2.2.1)
   X  N/A accelerator pedal not adjustable

6. Fully recline the seat back. (S16.3.2.1.2)
   __ N/A seat back not adjustable.

7. Place the dummy in the seat with the legs at an angle of 120 degrees to the thighs. The
    calves should not be touching the seat cushion. (S16.3.2.1.2)

8. Position the dummy in the seat such that the midsagittal plane is coincident with the
    longitudinal seat cushion markings as determined in Item 1.19 or 1.20. (S16.3.2.1.3 and
    S16.3.2.1.4)

9. Hold down the dummy’s thighs and push rearward on the upper torso to maximize the
    pelvic angle. (S16.3.2.1.5)

10. Set the angle between the legs and the thighs to 120 degrees. (S16.3.2.1.6)
11. Set the transverse distance between the centers of the front of the knees at 160 to 170 mm. (6.3 to 6.7 inches) Center the knee separation with respect to the longitudinal seat cushion marking as determined in Item 1.19 or 1.20. (S16.3.2.1.6) Record Knee Separation "170"

12. Push rearward on the dummy’s knees until the pelvis contacts the seat back, or the backs of the calves contact the seat cushion, whichever occurs first. (S16.3.2.1.6)
   _Pelvis contacted seat back.
   X_Calves contacted seat cushion.

13. Gently rock the upper torso ± 5 degrees (approximately 51 mm (2 inches)) side-to-side three time. (S16.3.2.1.7)

14. If needed, extend the legs until the feet do not contact the floor pan. The thighs should be resting on the seat cushion. (S16.3.2.1.8)

15. Position the right foot until the foot is in line with a longitudinal vertical plane passing through the center of the accelerator pedal. Maintain the leg and thigh in a vertical plane. (S16.3.2.1.8)

16. Rotate the left leg and thigh laterally to equalize the distance between each knee and the longitudinal seat cushion marking as determined in Item 1.19 or 1.20. (S16.3.2.1.8)

17. Attempt to return the seat to the foremost fore-aft position, mid-height, and seat cushion mid-angle as determined in Item 1. The foot may contact and depress the accelerator and/or change the angle of the foot with respect to the leg. (S16.3.2.1.8)
   _Foremost position achieved. Proceed to step 22.
   _Foremost not achieved because of foot interference. Proceed to step 19.
   _Foremost not achieved because of steering wheel contact.

18. If either of the dummy’s legs contact the steering wheel, move the steering wheel up the minimum amount required to avoid contact. If the steering wheel is not adjustable separate the knees the minimum required to avoid contact. (S16.3.2.1.8)
   _N/A- there was no leg contact
   _Steering wheel repositioned
   _Knees separated

19. If the left foot interferes with the clutch or brake pedals, rotate the left foot about the leg to provide clearance. If this is not sufficient, rotate the thigh outboard at the hip the minimum amount required for clearance. (S16.3.2.1.8)
   _N/A, No foot interference with pedals.
   _Foot adjusted to provide clearance.
   _Foot and Thigh adjusted to provide clearance.
20. Continue to move the seat. Use seat controls to line up the seat markings determined during item 1 to set the foremost fore-aft position, mid-height position and the seat cushion mid-angle. If the dummy contacts the interior move the seat rearward until a maximum clearance of 5 mm (0.2 inches) is achieved or the seat is in the closest detent position that does not cause dummy contact. (S16.3.2.1.8)
   — Foremost, mid-height position and the seat cushion mid-angle reached
   — Dummy contact. Clearance set at maximum of 5mm
     Measured Clearance ______________
   — Dummy Contact. Seat set at nearest detent position.
     Seat position ___ detent positions rearward of foremost
     (foremost is position zero)

21. If the steering wheel was repositioned in step 18, return the steering wheel to the original position. If the steering wheel contacts the dummy before reaching the original position, position the wheel until a maximum clearance of 5mm (.2 inches) is achieved, or the steering wheel is in the closest detent position that does not cause dummy contact. (S16.3.2.1.8)
   — N/A Steering wheel was not repositioned.
   — Original position achieved.
   — Dummy contact. Clearance set at maximum of 5mm
     Measured Clearance ______________
   — Dummy Contact. Steering wheel set at nearest detent position.
     Steering wheel position ___ detent positions upward of original position.
     (Original position is position zero)

X 22. If the seat back is adjustable, rotate the seat back forward while holding the thighs in place. Continue rotating the seat back forward until the transverse instrument platform of the dummy head is level ± 0.5 degrees. If the head cannot be leveled using the seat back adjustment, or the seat back is not adjustable, use the lower neck bracket adjustment to level the head. If a level position cannot be achieved, minimize the angle. (S16.3.2.1.9)
   — Head Level Achieved. (Check all that apply)
     X Head leveled using the adjustable seat back
     ___ Head leveled using the neck bracket.
     Head Angle __________ degrees
   — Head Level NOT Achieved. (Check all that apply)
     ___ Head adjusted using the adjustable seat back
     ___ Head adjusted using the neck bracket.
     Head Angle __________ degrees

X 23. Verify the pelvis is not interfering with the seat bight. (S16.3.2.1.9)
   — No interference
   ___ Pelvis moved forward the minimum amount so that it is not caught in the seat bight.

X 24. Verify the dummy abdomen is properly installed. (S16.3.2.1.9)
   — Abdomen still seated properly into dummy
   ___ Abdomen was adjusted because it was not seated properly into dummy
X_25. Head Angle
   X  N/A, neither the pelvis nor the abdomen were adjusted.
   X  25.1 Head still level (Go to 26)
   __25.2 Head level adjusted
      __Head Level Achieved. (Check all that apply)
         __Head leveled using the adjustable seat back
         __Head leveled using the neck bracket.
            Head Angle ________________ degrees
      __Head Level NOT Achieved. (Check all that apply)
         __Head level adjusted using the adjustable seat back
         __Head level adjusted using the neck bracket.
            Head Angle ________________ degrees

X_26. If the dummy torso contacts the steering wheel while performing step 22, reposition the
steering wheel in the following order to eliminate contact. (S16.3.2.1.9)
   X  N/A, No dummy torso contact with the steering wheel.
   __26.1 Adjust telescoping mechanism.
      __N/A No telescoping adjustment.
      __Adjustment performed (fill in appropriate change)
         Steering wheel moved ____ detent positions in the forward direction.
         Steering wheel moved ____ mm in the forward direction.
   __26.2 Adjust tilt mechanism.
      __N/A No tilt adjustment.
      __No adjustment performed.
      __Adjustment performed. (circle one)
         Steering wheel moved ____ detent positions Upward/Downward.
         Steering wheel moved ____ degrees Upward/Downward
   __26.3 Adjust Seat in the aft direction.
      __No Adjustment performed.
      __Seat moved aft ____ mm from original position.
      __Seat moved aft ____ detent positions from the original position.

X_27. Measure and set the pelvic angle using the pelvic angle gage TE-2504. The pelvic
angle should be 20.0 degrees ± 2.5 degrees. If the pelvic angle cannot be set to the
specified range because the head will not be level or because the dummy will have need
major repositioning, adjust the pelvis as closely as possible to the angle range, but keep
the head level. (S16.3.2.1.11)
   X  Pelvic angle set to 20.0 degrees ± 2.5 degrees.
   __Pelvic angle of 20.0 degrees not achieved, the angular difference was minimized.
   X  Record the pelvic angle. ______ 21.6____ degrees

X_28. Check the dummy for contact with the interior after completing adjustments.
       (S16.3.2.1.12)
   X  No contact.
   __Dummy in contact with interior.
      __Seat moved aft ____ mm from the previous position.
      __Seat moved aft ____ detent positions from the previous position.
X_29. Check the dummy to see if additional interior clearance is obtained, allowing the seat to be moved forward. (S16.3.2.1.12)
X N/A, Seat already at foremost position.
X Clearance unchanged. No adjustments required.
__Additional clearance available
__Seat moved Forward ___ mm from the previous position.
__Seat moved Forward ___ detent positions from the previous position.

X_30. Driver’s foot positioning, right foot. Place the foot perpendicular to the leg and determine if the heel contacts the floor pan at any leg position. If the heel contacts the floor pan proceed to step 31 otherwise, proceed to step 32. (S16.3.2.2.1)

X_31. Perform the following steps until either all steps are completed, or the foot contacts the accelerator pedal. Step 31.6 shall be completed in all cases. (S16.3.2.2.1(a))
X_31.1 With the rear of the heel contacting the floor pan, move the foot forward until pedal contact occurs or the foot is at the full forward position.
__31.2 If the vehicle has an adjustable accelerator pedal, move the pedals rearward until pedal contact occurs or the pedals reach the full rearward position.
__31.3 Extend the leg, allowing the heel to lose contact with the floor until the foot contacts the pedal. Do not raise the toe of the foot higher than the top of the accelerator pedal. If the foot does not contact the pedal, proceed to the next step. If pedal contact does occur, place a tapered foam block as shown in Figure G1 under the heel with the shallow part of the taper facing forward. (S16.3.2.2.3)
__31.4 Angle the foot to achieve contact between the foot and the pedal. If the foot does not contact the pedal, return the foot to the perpendicular orientation. If pedal contact does occur, place a tapered foam block as shown in Figure G1 under the heel with the shallow part of the taper facing forward. (S16.3.2.2.3)
__31.5 Align the centerline of the foot with the vertical-longitudinal plane passing through the center of the accelerator pedal. Place a tapered foam block as shown in Figure G1 under the heel with the shallow part of the taper facing forward. (S16.3.2.2.3)
X_31.6 Record foot position
X Pedal Contact achieved. Contact occurred at step __31.1__.
__X Heel contacts floor pan
__Heel set _____ mm from floor pan.
__Pedal Contact not achieved. Heel set _____ mm from the floor pan.
32. Perform the following steps until either all steps are completed, or the foot contacts the accelerator pedal. Step 30.5 shall be completed in all cases.

32.1 Extend the leg until the foot contacts the pedal. Do not raise the toe of the foot higher than the top of the accelerator pedal. If the foot does not contact the pedal, proceed to the next step. If pedal contact does occur, place a tapered foam block as shown in Figure G1 under the heel with the shallow part of the taper facing forward. (S16.3.2.2.1(b) & S16.3.2.2.2.3)

32.2 If the vehicle has an adjustable accelerator pedal, move the pedals rearward until pedal contact occurs or the pedals reach the full rearward position. If pedal contact does occur, place a tapered foam block as shown in Figure G1 under the heel with the shallow part of the taper facing forward. (S16.3.2.2.1(b) & S16.3.2.2.2.3)

N/A No pedal adjustment

32.3 Angle the foot to achieve contact between the foot and the pedal. If the foot does not contact the pedal, return the foot to the perpendicular orientation. If pedal contact does occur, place a tapered foam block as shown in Figure G1 under the heel with the shallow part of the taper facing forward. (S16.3.2.2.2 & S16.3.2.2.3)

32.4 Align the centerline of the foot in the same horizontal plane as the centerline of the accelerator pedal. Place a tapered foam block as shown in Figure G1 under the heel with the shallow part of the taper facing forward. (S16.3.2.2.3)

32.5 Record foot position

Pedal Contact achieved. Contact occurred at step ________.

Heel set _____ mm from floor pan.

Pedal Contact not achieved. Heel set _____ mm from the floor pan.
X 33. Driver’s foot positioning, left foot.

X 33.1 Place the foot perpendicular to the leg and determine if the heel contacts the floor pan at any leg position. If the heel contacts the floor pan proceed to step 33.2, otherwise position the leg as perpendicular to the thigh as possible with the foot parallel to the floor pan. (S16.2.2.6)

X 33.2 Place the foot on the toe board with the heel resting on the floor pan as close to the intersection of the floor pan and the toe board as possible. Adjust the angle of the foot if necessary to contact the toe board. If the foot will not contact the toe board, set the foot perpendicular to the leg, and set the heel on the floor pan as far forward as possible. Avoid contact with the brake pedal, clutch pedal, wheel well projection, and footrest. To avoid this contact use the following three manipulations in the order listed, with each subsequent option incorporating the previous, until contact is avoided: rotate the foot about the lower leg (abduction/adduction), plantar flex the foot, rotate the leg outboard about the hip. Movement should be the minimum amount necessary. If it is not possible to avoid all foot contact, give priority to avoiding brake or clutch pedal contact. (S16.2.2.4 & S16.2.2.5 & S16.2.2.7)

X No contact

X Foot rotated about the leg (abduction/adduction)

X Foot rotated about the leg, and foot plantar flexed

X Foot rotated about the leg, foot plantar flexed, and the leg rotated about the hip.

X 33.3 Record foot position.

X Heel does not contact floor pan.

X Heel on floor pan and foot on toe board.

X Heel on floor pan and foot not on toe board.

X 34. Driver arm/hand positioning.

X 34.1 Place the dummy’s upper arms adjacent to the torso with the arm centerlines as close to a vertical longitudinal plane as possible. (S16.3.2.3.1)

X 34.2 Place the palms of the dummy in contact with the outer part of the steering wheel rim at its horizontal centerline with the thumbs over the steering wheel rim. (S16.3.2.3.2)

X 34.3 If it is not possible to position the thumbs inside the steering wheel rim at its horizontal centerline, then position them above and as close to the horizontal centerline of the steering wheel rim as possible. (S16.3.2.3.3)

X 34.4 Lightly tape the hands to the steering wheel rim so that if the hand of the test dummy is pushed upward by a force of not less than 9 N (2 lb) and not more than 22 N (5 lb), the tape releases the hand from the steering wheel rim. S16.3.2.3.4

X 35. Adjustable head restraints

X N/A, there is no head restraint adjustment

X 35.1 If the head restraint has an automatic adjustment, leave it where the system positions the restraint after the dummy is placed in the seat. (S16.3.4.1) Go to 36.

X 35.2 Adjust each head restraint vertically so that the mid-horizontal plane determined in Item 2 is aligned with the center of gravity (CG) of the dummy head. (S16.3.4.3)

X 35.3 If the above position is not attainable, move the vertical center of the head restraint to the closest detent below the center of the head CG. (S16.3.4.3)

X N/A, midpoint position attained in previous step

X Headrest set at nearest detent below the head CG

X 35.4 If the head restraint has a fore and aft adjustment, place the restraint in the foremost position or until contact with the head is made, whichever occurs first. (S16.3.4.4)
36. Driver and passenger manual belt adjustment (for tests conducted with a belted dummy). (S16.3.5)

X  N/A Dummies are unbelted for this test.

36.1 If an adjustable seat belt D-ring anchorage exists, place it in the manufacturer's design position for a 5th percentile adult female. (S16.3.5.1) This information will be supplied by the COTR.

- Manufacturer's specified position ________________________________
- Actual Position _____________________________________________

36.2 Place the Type 2 manual belt around the test dummy and fasten the latch. (S16.3.5.2)

36.3 Ensure that the dummy's head remains as level as possible. (S16.3.5.3)

36.4 Remove all slack from the lap belt. Pull the upper torso webbing out of the retractor and allow it to retract; repeat this operation four times. Apply a 9 N (2 lbf) to 18 N (4 lbf) tension load to the lap belt. If the belt system is equipped with a tension-relieving device, introduce the maximum amount of slack into the upper torso belt that is recommended by the manufacturer. If the belt system is not equipped with a tension-relieving device, allow the excess webbing in the shoulder belt to be retracted by the retractive force of the retractor. (S16.3.5.4)

I certify that I have read and performed each instruction.

Signature: __________________________ Date: 3/31/09
DATA SHEET 36 - APPENDIX G
DUMMY POSITIONING PROCEDURES
FOR 5th PERCENTILE FEMALE PASSENGER TEST DUMMY
CONFORMING TO SUBPART O OF PART 572

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<th>Test Vehicle:</th>
<th>2009 Chevrolet Cobalt</th>
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<tr>
<td>Test Technician:</td>
<td>Joe Fleck</td>
</tr>
<tr>
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<td>C90106</td>
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<td>Test Date:</td>
<td>3/31/09</td>
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<tr>
<td><em>X</em> 5” female</td>
<td><em>X</em> 50” male</td>
</tr>
</tbody>
</table>

(Choices this item ONLY if it applies to this vehicle.)

**The passenger seat adjustments are controlled by the adjustments made to the driver’s seat. Therefore, positioning of the passenger dummy is made simultaneously with the driver dummy. Adjustments made to the seat to position the driver will over ride any adjustments that would normally be made to position the passenger. (S16.2.10.3)**

1. Seat Position

_X_ 1.1 Position the seat’s adjustable lumbar supports so that the lumbar supports are in the lowest, retracted or deflated adjustment positions. (S16.2.10.1, S20.1.9.1, S20.4.1, S22.1.7.1)

_X_ N/A – No lumbar adjustment

_X_ 1.2 Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2, S20.1.9.2, S20.4.1, S22.1.7.1, S22.4.2.1, S22.4.3.1, S24.4.2.1, S26.2.3, S26.3.1)

_X_ N/A – No additional support adjustment

_X_ 1.3 Position an adjustable leg support system in its rearmost position. (8/27/04 interpretation to Toyota)

_X_ N/A – No adjustable leg support system

_X_ 1.4 **Mark** a point (seat cushion reference point) on the side of the seat cushion that is between 150 mm and 250 mm from the front edge of the seat cushion. (S16.3.1.12)

_X_ 1.5 Draw a line (seat cushion reference line) through the seat cushion reference point. (S16.3.1.13)

_X_ 1.6 Use only the controls that primarily move the seat in the fore-aft direction to move the seat cushion reference point to the rearmost position. (S16.2.10.3.1, S22.1.7.3)

_X_ 1.7 If the seat cushion adjusts fore-aft, independent of the seat back, use only the controls that primarily move the seat cushion in the fore-aft direction to move the seat cushion reference point to the rearmost position. (S16.2.10.3.1, S20.1.9.3)

_X_ N/A – No independent fore-aft seat cushion adjustment
1.8 Use any part of any control, other than the parts just used for fore-aft positioning, to determine the range of angles of the seat cushion reference line and to set the seat cushion reference line at the mid-angle. (S16.2.10.3.1)
   - Maximum angle Zero
   - Minimum angle Zero
   - Mid-angle Zero

1.9 If the seat and/or seat cushion height is adjustable, use any part of any control other than the parts which primarily move the seat or seat cushion fore-aft, to put the seat cushion reference point in its lowest position with the seat cushion reference line angle at the mid-angle found in 1.8. (S16.2.10.3.1)
   - N/A – No seat height adjustment

1.10 Use only the controls that primarily move the seat in the fore-aft direction to verify the seat is in the rearmost position.

1.11 Use only the controls that primarily move the seat in the fore-aft direction to mark the fore-aft seat positions. Mark each position so that there is a visual indication when the seat is at a particular position. For manual seats, move the seat forward one detent at a time and mark each detent. For power seats, mark only the rearmost, middle, and foremost positions. Label three of the positions with the following: F for foremost, M for mid-position (if there is no mid-position, label the closest adjustment position to the rear of the mid-point), and R for rearmost.

1.12 Use only the controls that primarily move the seat in the fore-aft direction to place the seat in the rearmost position.

1.13 Use any part of any control, other than the parts which primarily move the seat or seat cushion fore-aft, to find and visually mark the maximum, minimum, and middle height of the seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S22.4.3.1, S24.1.2, S24.3.1, S24.4.3.1, S26.2.3, S26.3.1)
   - N/A – No seat height adjustment. Go to 1.18

1.14 Use only the controls that primarily move the seat and/or seat cushion in the fore-aft direction to place the seat in the mid-fore-aft position.

1.15 Use any part of any control, other than the parts which primarily move the seat or seat cushion fore-aft, to find and visually mark the maximum, minimum, and middle height of the seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)

1.16 Use only the controls that change the seat in the fore-aft direction to place the seat in the foremost position. (S16.2.10.3.2)

1.17 Use any part of any control, other than the parts which primarily move the seat or seat cushion fore-aft, to find and visually mark the maximum, minimum, and middle height of the seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S16.2.10.3.3, S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)

1.18 Is the seat a bucket seat?
   - Yes, go to 1.19 and skip 1.20
   - No, go to 1.20 and skip 1.19
1.19 Bucket seats:
Locate and mark for future reference the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S16.3.1.10 & S20.1.10)

1.20 Bench seats:
Locate and mark the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S20.2.1.4, S22.2.1.3, S24.2.3, S20.4.4, S22.2.2.1(b), S22.2.2.3(b), S22.2.2.4(a), S22.2.2.5(a), S22.2.2.6(a), S22.2.2.7(a), S24.2.3(a))
Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. _______
Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. (The vertical plane through this longitudinal centerline is Plane B for suppression.) _______

2. Head Restraint Position
N/A Vehicle contains automatic head restraints.
N/A, there is no head restraint adjustment Go to 3

2.1 Adjust the head restraint to its lowest position. (S16.2.10.2, S20.1.9.6 S20.4.1, S22.1.7.6, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)

2.2 All adjustments of the head restraint shall be used to position it full forward. For example, if it rotates, rotate it such that the head restraint extends as far forward as possible. Mark the foremost position. (S16.2.10.2 & S16.3.4.4 & S20.1.9.6, S20.4.1, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)

2.3 Measure the vertical distance from the top most point of the head restraint to the bottom most point. Locate and mark a horizontal plane through the midpoint of this distance. (S16.3.4.3)
   Vertical height of head restraint 180 mm
   Mid-point height 90 mm

3. Place the SCRP in the full rearward, mid-height position, and mid-seat cushion angle. (S16.3.3.1.1)

4. Fully recline the seat back. (S16.3.3.1.2)
N/A seat back not adjustable.

5. Place the dummy in the seat with the legs at an angle of 120 degrees to the thighs. The calves should not be touching the seat cushion. (S16.3.3.1.2)

6. Position the dummy in the seat such that the midsagittal plane is coincident with the longitudinal seat cushion marking that was determined in item 1.19 or 1.20. (S16.3.3.1.3 and S16.3.3.1.4)

7. Hold down the dummy’s thighs and push rearward on the upper torso to maximize the pelvic angle. (S16.3.3.1.5)

8. Set the angle between the legs and the thighs to 120 degrees. (S16.3.3.1.6)
X. 9.  Set the transverse distance between the centers of the front of the knees at 160 to 170 mm. (6.3 to 6.7 inches).  Center the knee separation with respect to the longitudinal seat cushion marking that was determined in item 1.19 or 1.20.  (S16.3.3.1.6)  
  Record Knee Separation:  _165_____

X. 10. Push rearward on the dummy’s knees until the pelvis contacts the seat back, or the backs of the calves contact the seat cushion, whichever occurs first.  (S16.3.3.1.6)  
  __Pelvis contacted seat back.  
  _Calves contacted seat cushion.  

X. 11. Gently rock the upper torso ± 5 degrees (approximately 51 mm (2 inches)) side-to-side three times.  (S16.3.3.1.7)

X. 12. If needed, extend the legs until the feet do not contact the floor pan.  The thighs should be resting on the seat cushion.  (S16.3.3.1.8)

X. 13. Use seat controls to line up the seat markings determined during the completion of item 1 to set the foremost fore-aft position, mid-height position and the seat cushion mid-angle.  If the dummy contacts the interior move the seat rearward until a maximum clearance of 5 mm (0.2 inches) is achieved or the seat is in the closest detent position that does not cause dummy contact.  (S16.3.3.1.8)  
  X. Foremost, mid-height position and the seat cushion mid-angle reached  
  ___Dummy contact.  Clearance set at maximum of 5mm  
  Measured Clearance_________________  
  ___Dummy Contact.  Seat set at nearest detent position.  
  Seat position ____ detent positions rearward of foremost  
  (foremost is position zero)

X. 14. If the seat back is adjustable, rotate the seat back forward while holding the thighs in place.  Continue rotating the seat back forward until the transverse instrument platform of the dummy head is level ± 0.5 degrees.  If head cannot be leveled using the seat back adjustment, or the seat back is not adjustable, use the lower neck bracket adjustment to level the head.  If a level position cannot be achieved, adjust the head as closely as possible to the ± 0.5 degree range.  (S16.3.3.1.9 and S16.3.3.1.10)  
  (Check All That Apply)  
  __Seat back not adjustable  
  __Seat back not independent of driver side seat back  
  X. Head Level Achieved.  (Check all that apply)  
  X. Head leveled using the adjustable seat back  
  __Head leveled using the neck bracket.  
  Head Angle 0.2_______ degrees  
  __Head Level NOT Achieved.  (Check all that apply)  
  __Head adjusted using the adjustable seat back  
  __Head adjusted using the neck bracket.  
  Head Angle ________________ degrees

X. 15. Verify the pelvis is not interfering with the seat bight.  (S16.3.3.1.9)  
  X. No interference  
  __Pelvis moved forward the minimum amount so that it is not caught in the seat bight.

X. 16. Verify the dummy abdomen is properly installed.  (S16.3.3.1.9)  
  X. Abdomen still seated properly into dummy  
  __Abdomen was adjusted because it was not seated properly into dummy

X. 17.  Head Angle  
  X. N/A, neither the pelvis nor the abdomen were adjusted.
X_17.1 Head still level (Go to 18)

__17.2 Head level adjusted

__Head Level Achieved. (Check all that apply)

__Head leveled using the adjustable seat back

__Head leveled using the neck bracket.

__Head Angle ____________ degrees

__Head Level NOT Achieved. (Check all that apply)

__Head adjusted using the adjustable seat back

__Head adjusted using the neck bracket.

__Head Angle ____________ degrees

X_18. Measure and set the pelvic angle using the pelvic angle gage TE-2504. The pelvic angle should be 20.0 degrees ± 2.5 degrees. If the pelvic angle cannot be set to the specified range because the head will not be level or because the dummy will have need major repositioning, adjust the pelvis as closely as possible to the angle range, but keep the head level.

X Pelvic angle set to 20.0 degrees ± 2.5 degrees.

__Pelvic angle of 20.0 degrees not achieved, the angular difference was minimized.

X Record the pelvic angle. ___21.3______ degrees

X_19. Check the dummy for contact with the interior after completing adjustments.

X No contact.

__Dummy in contact with interior.

__Seat moved aft ___ mm from the previous position.

__Seat moved aft ___ detent positions from the previous position.

X_20. Verify the transverse instrument platform of the dummy head is level +/- 0.5 degrees. Use the lower neck bracket adjustment to level the head. If a level position cannot be achieved, minimize the angle. (S16.3.3.1.9, S16.3.3.1.10, and S16.3.3.1.11)

X Head Level Achieved

__Head Angle ____________ degrees

__Head Level NOT Achieved.

__Head Angle ____________ degrees

X_21. Check the dummy to see if additional interior clearance is obtained, allowing the seat to be moved forward. (S16.3.3.1.12)

__N/A Bench Seat

X__N/A Seat already at full forward position.

__Clearance unchanged. No adjustments required.

__Additional clearance available

__Seat moved Forward ___ mm from the previous position.

__Seat moved Forward ___ detent positions from the previous position.

__Seat moved Forward, Full Forward position reached.

X_22. Passenger foot positioning. (Indicate final position achieved) (S16.3.3.2)

__22.1 Place feet flat on the toe board; OR (S16.3.3.2.1)

X__22.2 If the feet cannot be placed flat on the toe board, set the feet perpendicular to the lower leg, and rest the heel as far forward on the floor pan as possible; OR (S16.3.3.2.2)

__22.3 If the heels do not touch the floor pan, set the legs as perpendicular to the thighs as possible and set the feet parallel to the floor pan. (S16.3.3.2.2)
X_23. Passenger arm/hand positioning. (S16.3.3.3)
   X_23.1 Place the dummy’s upper arms adjacent to the torso with the arm centerlines as close to a vertical longitudinal plane as possible. (S16.3.3.3.1)
   X_23.2 Place the palms of the dummy in contact with the outer part of the thighs (S16.3.3.3.2)
   X_23.3 Place the little fingers in contact with the seat cushion. (S16.3.3.3.3)

X_24. Adjustable head restraints (S16.3.4)
   __N/A, there is no head restraint adjustment
   __24.1 If the head restraint has an automatic adjustment, leave it where the system positions the restraint after the dummy is placed in the seat. (S16.3.4.1) Go to 25.
   X_24.2 Adjust each head restraint vertically so that the horizontal plane determined in Item 2 is aligned with the center of gravity (CG) of the dummy head. (S16.3.4.3)
   X_24.3 If the above position is not attainable, move the vertical center of the head restraint to the closest detent below the center of the head CG. (S16.3.4.3)
       __N/A midpoint position attained in previous step
       __Headrest set at nearest detent below the head CG
   __24.4 If the head restraint has a fore and aft adjustment, place the restraint in the foremost position or until contact with the head is made, whichever occurs first. (S16.3.4.4)

X_25. Manual belt adjustment (for tests conducted with a belted dummy) S16.3.5
   X_N/A, Unbelted test
   __25.1 If an adjustable seat belt D-ring anchorage exists, place it in the manufacturer’s design position for a 5th percentile adult female. This information will be supplied by the COTR. (S16.3.5.1)
       Manufacturer’s specified position ______________________________
       Actual Position__________________________________________
   __25.2 Place the Type 2 manual belt around the test dummy and fasten the latch. (S16.3.5.2)
   __25.3 Ensure that the dummy’s head remains as level as possible. (S16.3.5.3)
   __25.4 Remove all slack from the lap belt. Pull the upper torso webbing out of the retractor and allow it to retract; repeat this operation four times. Apply a 9 N (2 lbf) to 18 N (4 lbf) tension load to the lap belt. If the belt system is equipped with a tension-relieving device, introduce the maximum amount of slack into the upper torso belt that is recommended by the manufacturer. If the belt system is not equipped with a tension-relieving device, allow the excess webbing in the shoulder belt to be retracted by the retractive force of the retractor. (S16.3.5.4)

I certify that I have read and performed each instruction.

Signature:  ___________________________ Date:  3/31/09
DATA SHEET 37
DUMMY MEASUREMENTS

Test Vehicle: 2009 Chevrolet Cobalt
Test Program: FMVSS 208 Compliance
Test Technician: Jordan Haynes

DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS

CD  Chest to Dash
CS  Chest to Steering Wheel Hub
HH  Head to Header
HW  Head to Windshield
HZ  Head to Roof
KDA  Knee to Dash Angle
KDL  Left Knee to Dash
KDR  Right Knee to Dash
NA  Nose to Rim Angle
NR  Nose to Rim
PA  Pelvic Angle
RA  Rim to Abdomen
SA  Seat Back Angle
SCA  Steering Column Angle
SH  Striker to H-Point
SK  Striker to Knee
ST  Striker to Head
SWA  Steering Wheel Angle
TA  Tibial Angle
WA  Windshield Angle

AD  Arm to Door
HD  H-Point to Door
HR  Head to Side Header
HS  Head to Side Window
KK  Knee to Knee
SHY  Striker to H-Point (Y Axis)

Test Vehicle: 2009 Chevrolet Cobalt
Test Program: FMVSS 208 Compliance
Test Technician: Jordan Haynes

NHTSA No.: C90106
Test Date: 3/31/09
<table>
<thead>
<tr>
<th>Code</th>
<th>Measurement Description</th>
<th>Driver SN 511</th>
<th>Passenger SN 516</th>
</tr>
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<td>Length (mm)</td>
<td>Angle (°)</td>
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<tr>
<td>WA</td>
<td>Windshield Angle</td>
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<tr>
<td>SWA</td>
<td>Steering Wheel Angle</td>
<td>68.8</td>
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<tr>
<td>SCA</td>
<td>Steering Column Angle</td>
<td>21.2</td>
<td></td>
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<tr>
<td>SA</td>
<td>Seat Back Angle (On Headrest Post)</td>
<td>1.1</td>
<td>4.1</td>
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<td>HZ</td>
<td>Head to Roof (Z)</td>
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<td>238</td>
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<td>HH</td>
<td>Head to Header</td>
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<td>HW</td>
<td>Head to Windshield</td>
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<td>HR</td>
<td>Head to Side Header (Y)</td>
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<td>Nose to Rim</td>
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<td>Chest to Steering Hub</td>
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<td>Rim to Abdomen</td>
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<td>Head to Side Window</td>
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<tr>
<td>HD</td>
<td>H-Point to Door (Y)</td>
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<td>156</td>
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<tr>
<td>AD</td>
<td>Arm to Door (Y)</td>
<td>141</td>
<td>127</td>
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<tr>
<td>AA</td>
<td>Ankle to Ankle</td>
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<td>158</td>
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</table>
**SEAT BELT POSITIONING DATA**

- Dummy's Centerline
- 'D' Ring
- Shoulder Belt Portion
- Lap Belt Portion
- 1/8" Thick Aluminum Plate
- Emergency Locking Retractor
- Outboard Anchorage
- Inboard Anchorage
- Floorpan

**FRONT VIEW OF DUMMY**

**SEAT BELT POSITIONING MEASUREMENTS**

<table>
<thead>
<tr>
<th>Measurement Description</th>
<th>Units</th>
<th>Driver</th>
<th>Passenger</th>
</tr>
</thead>
<tbody>
<tr>
<td>PBU - Top surface of reference to belt upper edge</td>
<td>mm</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>PBL - Top surface of reference to belt lower edge</td>
<td>mm</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>
DATA SHEET 38
CRASH TEST

Test Vehicle: 2009 Chevrolet Cobalt
Test Program: FMVSS 208 Compliance
Test Technician: Jordan Haynes

IMPACT ANGLE: Zero Degrees
BELTED DUMMIES (YES/NO): No
TEST SPEED: X 32 to 40 kmph ___ 0 to 48 kmph ___ 0 to 56 kmph
DRIVER DUMMY: X 5th female ___ 50th male
PASSENGER DUMMY: X 5th female ___ 50th male

1. Vehicle underbody painted
2. The speed measuring devices are in place and functioning.
3. The speed measuring devices are 1.0 m from the barrier (spec. 1.5m) and 30 cm from the barrier (spec. is 30 cm)
4. Convertible top is in the closed position.
5. Instrumentation and wires are placed so motion of dummies during impact is not affected.
6. Tires inflated to pressure on tire placard or if it does not have a tire placard because it is not a passenger car, then inflated to the tire pressure specified in the owner information.
   230 kpa front left tire 230 kpa specified on tire placard or in owner information
   230 kpa front right tire 230 kpa specified on tire placard or in owner information
   230 kpa rear left tire 230 kpa specified on tire placard or in owner information
   230 kpa rear right tire 230 kpa specified on tire placard or in owner information
7. Time zero contacts on barrier in place.
8. Pre test zero and shunt calibration adjustments performed and recorded
9. Dummy temperature meets requirements of section 12.2 of the test procedure.
10. Vehicle hood closed and latched
11. Transmission placed in neutral
12. Parking brake off
13. Are the heads still level?
   No, Adjust dummy so that head is at the angle recorded in the Appendix F or G data sheets and then continue
14. Ignition in the ON position
15. Doors closed and latched but not locked
16. Posttest zero and shunt calibration checks performed and recorded
17. Actual test speed 37.3 kmph
18. Vehicle rebound from the barrier 298 cm
19. Describe whether the doors open after the test and what method is used to open the doors.
   Driver Dummy: Head to Air Bag and Headrest; Chest to Air Bag; Knees to Knee Bolster
   Passenger Dummy: Head to Air Bag; Chest to Air Bag; Knees to Glove Box
20. Describe the contact points of the dummy with the interior of the vehicle.

REMARKS:

Signature: ____________________________ Date: 3/31/09

I certify that I have read and performed each instruction.
<table>
<thead>
<tr>
<th>IMPACT ANGLE:</th>
<th>Zero Degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td>BELTED DUMMIES (YES/NO):</td>
<td>No</td>
</tr>
<tr>
<td>TEST SPEED:</td>
<td>X 32 to 40 kmph</td>
</tr>
<tr>
<td>DRIVER DUMMY:</td>
<td>X 5th female</td>
</tr>
<tr>
<td>PASSENGER DUMMY:</td>
<td>X 5th female</td>
</tr>
</tbody>
</table>

| Vehicle Year/Make/Model/Body Style: | 2009 Chevrolet Cobalt Passenger Car |
| VIN: | 1G1AK58H897127727 |
| Wheelbase: | 2629 mm |
| Build Date: | 08/08 |
| Vehicle Size Category: | 3 |
| Test Weight: | 1423.8 kg |
| Front Overhang: | 969 mm |
| Overall Width: | 1740 mm |
| Overall Length Center: | 4537 mm |

<table>
<thead>
<tr>
<th>Accelerometer Data</th>
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<tbody>
<tr>
<td><strong>Location:</strong></td>
</tr>
<tr>
<td><strong>Linearity:</strong></td>
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</tbody>
</table>

| Integration Algorithm: | Trapezoidal |
| Vehicle Impact Speed: | 37.3 kmph |
| Time of Separation: | 116.5 ms |
| Velocity Change: | 42.5 kmph |
CRUSH PROFILE

Collision Deformation Classification: 12FDEW6
Midpoint of Damage: Vehicle Longitudinal Centerline
Damage Region Length (mm): 1723
Impact Mode: Frontal Barrier

<table>
<thead>
<tr>
<th>No.</th>
<th>Measurement Description</th>
<th>Units</th>
<th>Pre-Test</th>
<th>Post-Test</th>
<th>Difference</th>
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<td>4220</td>
<td>234</td>
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<tr>
<td>C2</td>
<td>Crush zone 2 at left side</td>
<td>mm</td>
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<td>4188</td>
<td>262</td>
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</tbody>
</table>

REMARKS:

Signature: [Signature]
Date: 3/31/09

I certify that I have read and performed each instruction.
DATA SHEET 41
WINDSHIELD MOUNTING (FMVSS 212)

IMPACT ANGLE: Zero Degrees
BELTED DUMMIES (YES/NO): No
TEST SPEED: X 32 to 40 kmph | 0 to 48 kmph | 0 to 56 kmph
DRIVER DUMMY: X 5th female | 50th male
PASSENGER DUMMY: X 5th female | 50th male

1. Pre-Crash
1.1 Describe from visual inspection how the windshield is mounted and describe any trim material.
Retained with glue
Rubber and plastic trim

1.2 Mark the longitudinal centerline of the windshield.

1.3 Measure pre-crash A, B, and C for the left side and record in the chart below.

1.4 Measure pre-crash C, D, and E for the right side and record in the chart below.

1.5 Measure from the edge of the retainer or molding to the edge of the windshield.
Dimension G (mm): 6 mm

2. Post Crash
2.1 Can a single thickness of copier type paper (as small a piece as necessary) slide between the windshield and the vehicle body?
X No - Pass. Skip to the table of measurements, complete it by repeating the pre-crash measurements in the post crash column, and calculate the retention percentage, which will be 100%.

X Yes, go to 2.2

2.2 Visibly mark the beginning and end of the portions of the periphery where the paper slides between the windshield and the vehicle body.

2.3 Measure and record post-crash A, B, C, D, E, and F such that the measurements do not include any of the parts of the windshield where the paper slides between the windshield and the vehicle body.

2.4 Calculate and record the percent retention for the right and left side of the windshield.

2.5 Is total right side percent retention less than 75%?
X Yes, Fail
X No, Pass

2.6 Is total left side percent retention less than 75%?
X Yes, Fail
X No, Pass

Test Vehicle: 2009 Chevrolet Cobalt
Test Program: FMVSS 208 Compliance
Test Technician: Jamie Aide
NHTSA No.: C90106
Test Date: 3/31/09
## WINDSHIELD RETENTION MEASUREMENTS

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Pre-Crash (mm)</th>
<th>Post-Crash (mm)</th>
<th>Percent Retention (Post-Test ÷ Pre-Crash)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Left Side</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>558</td>
<td>558</td>
<td>100%</td>
</tr>
<tr>
<td>B</td>
<td>838</td>
<td>838</td>
<td>100%</td>
</tr>
<tr>
<td>C</td>
<td>716</td>
<td>716</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2112</strong></td>
<td><strong>2112</strong></td>
<td><strong>100%</strong></td>
</tr>
<tr>
<td><strong>Right Side</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>558</td>
<td>558</td>
<td>100%</td>
</tr>
<tr>
<td>E</td>
<td>838</td>
<td>838</td>
<td>100%</td>
</tr>
<tr>
<td>F</td>
<td>716</td>
<td>716</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2112</strong></td>
<td><strong>2112</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Indicate area of mounting failure: NONE

---

**FRONT VIEW OF WINDSHIELD**

INDICATE WIDTH OF MOLDING

![Diagram of windshield dimensions]

**REMARKS:**

Signature: [Signature]

Date: 3/31/09

I certify that I have read and performed each instruction.
This standard specifies limits for the displacement of vehicle components into the windshield area during a frontal barrier impact test at any speed up to and including 48 km/h.

1. Place a 165 mm diameter rigid sphere, with a mass of 6.8 kg on the instrument panel so that it is simultaneously touching the instrument panel and the windshield. (571.219 S6.1(a))

2. Roll the sphere from one side of the windshield to the other while marking on the windshield where the sphere contacts the windshield. (571.219 S6.1(b))

3. From the outermost contactable points on the windshield draw a horizontal line to the edges of the windshield. (571.219 S6.1(b))

4. Draw a line on the inner surface of the windshield that is 13 mm below the line determined in items 2 and 3.

5. After the crash test, record any points where a part of the exterior of the vehicle has marked, penetrated, or broken the windshield.

Provide all dimensions necessary to reproduce the protected area.
AREA OF PROTECTED ZONE FAILURES:

B. Provide coordinates of the area that the protected zone was penetrated more than 0.25 inches by a vehicle component other than one which is normally in contact with the windshield.

<table>
<thead>
<tr>
<th>X</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td></td>
</tr>
</tbody>
</table>

C. Provide coordinates of the area beneath the protected zone template that the inner surface of the windshield was penetrated by a vehicle component.

<table>
<thead>
<tr>
<th>X</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td></td>
</tr>
</tbody>
</table>

REMARKS:

I certify that I have read and performed each instruction.

Signature: [Signature]  Date:  3/31/09
DATA SHEET 43
FUEL SYSTEM INTEGRITY (FMVSS 301)

Test Vehicle: 2009 Chevrolet Cobalt  NHTSA No.: C90106
Test Program: FMVSS 208 Compliance  Test Date: 3/31/09
Test Technician: Ben Fischer

TYPE OF IMPACT: 23 mph Unbelted Flat Frontal

Stoddard Solvent Spillage Measurements

A. From impact until vehicle motion ceases: 0.0 grams
   (Maximum Allowable = 28 grams)

B. For the 5 minute period after motion ceases: 0.0 grams
   (Maximum Allowable = 142 grams)

C. For the following 25 minutes: 0.0 grams
   (Maximum Allowable = 28 grams/minute)

D. Spillage: NONE

REMARKS: NO SPILLAGE
1. The specified fixture rollover rate for each 90° of rotation is 60 to 180 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. Details of Stoddard Solvent spillage locations: None
**APPENDIX A**

**CRASH TEST DATA**

**TABLE OF DATA PLOTS**

<table>
<thead>
<tr>
<th>Figure No.</th>
<th>Data Description</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Driver Head X Acceleration vs. Time</td>
<td>A-1</td>
</tr>
<tr>
<td>2</td>
<td>Driver Head Y Acceleration vs. Time</td>
<td>A-1</td>
</tr>
<tr>
<td>3</td>
<td>Driver Head Z Acceleration vs. Time</td>
<td>A-1</td>
</tr>
<tr>
<td>4</td>
<td>Driver Head Resultant Acceleration vs. Time</td>
<td>A-1</td>
</tr>
<tr>
<td>5</td>
<td>Driver Head X Velocity vs. Time</td>
<td>A-2</td>
</tr>
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<td>6</td>
<td>Driver Head Y Velocity vs. Time</td>
<td>A-2</td>
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<td>7</td>
<td>Driver Head Z Velocity vs. Time</td>
<td>A-2</td>
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<td>8</td>
<td>Driver Neck Force X vs. Time</td>
<td>A-3</td>
</tr>
<tr>
<td>9</td>
<td>Driver Neck Force Y vs. Time</td>
<td>A-3</td>
</tr>
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<td>11</td>
<td>Driver Neck Force Resultant vs. Time</td>
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<td>12</td>
<td>Driver Neck Moment X vs. Time</td>
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<td>13</td>
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<td>15</td>
<td>Driver Neck Moment Resultant vs. Time</td>
<td>A-4</td>
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<td>16</td>
<td>Driver Chest X Acceleration vs. Time</td>
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<td>Driver Chest Y Acceleration vs. Time</td>
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<td>18</td>
<td>Driver Chest Z Acceleration vs. Time</td>
<td>A-5</td>
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<td>19</td>
<td>Driver Chest Resultant Acceleration vs. Time</td>
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<td>Driver Chest X Velocity vs. Time</td>
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<td>Driver Chest Y Velocity vs. Time</td>
<td>A-6</td>
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<tr>
<td>22</td>
<td>Driver Chest Z Velocity vs. Time</td>
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</tr>
<tr>
<td>23</td>
<td>Driver Chest Displacement vs. Time</td>
<td>A-6</td>
</tr>
<tr>
<td>24</td>
<td>Driver Left Femur Force vs. Time</td>
<td>A-7</td>
</tr>
<tr>
<td>25</td>
<td>Driver Right Femur Force vs. Time</td>
<td>A-7</td>
</tr>
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<td>26</td>
<td>Passenger Head X Acceleration vs. Time</td>
<td>A-8</td>
</tr>
<tr>
<td>27</td>
<td>Passenger Head Y Acceleration vs. Time</td>
<td>A-8</td>
</tr>
</tbody>
</table>
Figure No. 28. Passenger Head Z Acceleration vs. Time
Figure No. 29. Passenger Head Resultant Acceleration vs. Time
Figure No. 30. Passenger Head X Velocity vs. Time
Figure No. 31. Passenger Head Y Velocity vs. Time
Figure No. 32. Passenger Head Z Velocity vs. Time
Figure No. 33. Passenger Neck Force X vs. Time
Figure No. 34. Passenger Neck Force Y vs. Time
Figure No. 35. Passenger Neck Force Z vs. Time
Figure No. 36. Passenger Neck Force Resultant vs. Time
Figure No. 37. Passenger Neck Moment X vs. Time
Figure No. 38. Passenger Neck Moment Y vs. Time
Figure No. 39. Passenger Neck Moment Z vs. Time
Figure No. 40. Passenger Neck Moment Resultant vs. Time
Figure No. 41. Passenger Chest X Acceleration vs. Time
Figure No. 42. Passenger Chest Y Acceleration vs. Time
Figure No. 43. Passenger Chest Z Acceleration vs. Time
Figure No. 44. Passenger Chest Resultant Acceleration vs. Time
Figure No. 45. Passenger Chest X Velocity vs. Time
Figure No. 46. Passenger Chest Y Velocity vs. Time
Figure No. 47. Passenger Chest Z Velocity vs. Time
Figure No. 48. Passenger Chest Displacement vs. Time
Figure No. 49. Passenger Left Femur Force vs. Time
Figure No. 50. Passenger Right Femur Force vs. Time
Figure No. 51. Driver Nij (N_{TF}) vs. Time
Figure No. 52. Driver Nij (N_{TE}) vs. Time
Figure No. 53. Driver Nij (N_{CF}) vs. Time
Figure No. 54. Driver Nij (N_{CE}) vs. Time
Figure No. 55. Passenger Nij (N_{TF}) vs. Time
Figure No. 56. Passenger Nij (N_{TE}) vs. Time
Figure No. 57. Passenger Nij (N_{CF}) vs. Time
Figure No. 58.  Passenger Nij (N_{CE}) vs. Time  
Figure No. 59.  Driver Occipital Condyle Moment vs. Time  
Figure No. 60.  Passenger Occipital Condyle Moment vs. Time  
Figure No. 61.  Left Rear Seat Crossmember X Acceleration vs. Time  
Figure No. 62.  Left Rear Seat Crossmember X Velocity vs. Time  
Figure No. 63.  Right Rear Seat Crossmember X Acceleration vs. Time  
Figure No. 64.  Right Rear Seat Crossmember X Velocity vs. Time  
Figure No. 65.  Top of Engine X Acceleration vs. Time  
Figure No. 66.  Top of Engine X Velocity vs. Time  
Figure No. 67.  Bottom of Engine X Acceleration vs. Time  
Figure No. 68.  Bottom of Engine X Velocity vs. Time  
Figure No. 69.  Left Brake Caliper X Acceleration vs. Time  
Figure No. 70.  Left Brake Caliper X Velocity vs. Time  
Figure No. 71.  Right Brake Caliper X Acceleration vs. Time  
Figure No. 72.  Right Brake Caliper X Velocity vs. Time  
Figure No. 73.  Instrument Panel X Acceleration vs. Time  
Figure No. 74.  Instrument Panel X Velocity vs. Time  
Figure No. 75.  Trunk Z Acceleration vs. Time  
Figure No. 76.  Trunk Z Velocity vs. Time
Test Date: 03/31/09
Speed: 23.2 mph (37.3 km/h)

- **Max: 1.6 G's**
- **Tmax: 108.1 ms**
- **Min: -43.7 G's**
- **Tmin: 64.6 ms**

**CFC 1000**

- **Max: 3.2 G's**
- **Tmax: 51.1 ms**
- **Min: -3.7 G's**
- **Tmin: 63.9 ms**

**CFC 1000**

- **Max: 4.9 G's**
- **Tmax: 138.7 ms**
- **Min: -10.1 G's**
- **Tmin: 88.5 ms**

**CFC 1000**

- **Max: 43.7 G's**
- **Tmax: 64.6 ms**
- **Min: 0.0 G's**
- **Tmin: 0.0 ms**

**CFC 1000**
23 MPH FRONTAL UNBELTED 5THS
2009 CHEVROLET COBALT (C90106)
Test Date: 03/31/09
Speed: 23.2 mph (37.3 km/h)

DRIVER HEAD X Velocity (kph) vs TIME (ms)
Max: 37.3 kph
Tmax: 0.0 ms
Min: -8.2 kph
Tmin: 237.6 ms
CFC 180

DRIVER HEAD Y Velocity (kph) vs TIME (ms)
Max: 0.3 kph
Tmax: 53.5 ms
Min: -1.6 kph
Tmin: 210.2 ms
CFC 180

DRIVER HEAD Z Velocity (kph) vs TIME (ms)
Max: 0.0 kph
Tmax: 43.5 ms
Min: -10.5 kph
Tmin: 114.7 ms
CFC 180
23 MPH FRONTAL UNBELTED 5THS
2009 CHEVROLET COBALT (C90106)
Test Date: 03/31/09
Speed: 23.2 mph (37.3 km/h)

Max: 96.3 N
Tmax: 186.4 ms
Min: -4964.9 N
Tmin: 60.2 ms
CFC 600

Max: 187.1 N
Tmax: 113.7 ms
Min: -3458.9 N
Tmin: 63.2 ms
CFC 600
23 MPH FRONTAL UNBELTED 5THS
2009 CHEVROLET COBALT (C90106)

Test Date: 03/31/09
Speed: 23.2 mph (37.3 km/h)

Max: 3.9 G's
Tmax: 130.5 ms
Min: -43.4 G's
Tmin: 92.0 ms
CFC 1000

Max: 14.2 G's
Tmax: 125.4 ms
Min: -12.3 G's
Tmin: 93.9 ms
CFC 1000

Max: 11.8 G's
Tmax: 68.9 ms
Min: -12.1 G's
Tmin: 74.6 ms
CFC 1000

Max: 45.4 G's
Tmax: 94.0 ms
Min: 0.0 G's
Tmin: 0.0 ms
CFC 1000

A-8
23 MPH FRONTAL UNBELTED 5THS
2009 CHEVROLET COBALT (C90106)

Test Date: 03/31/09
Speed: 23.2 mph (37.3 km/h)

PASSENGER HEAD X Velocity (kph) vs TIME (ms)
Max: 37.6 kph
Tmax: 63.1 ms
Min: -22.9 kph
Tmin: 300.0 ms
CFC 180

PASSENGER HEAD Y Velocity (kph) vs TIME (ms)
Max: 5.5 kph
Tmax: 300.0 ms
Min: -8.5 kph
Tmin: 109.9 ms
CFC 180

PASSENGER HEAD Z Velocity (kph) vs TIME (ms)
Max: 12.4 kph
Tmax: 284.9 ms
Min: -3.3 kph
Tmin: 79.8 ms
CFC 180
23 MPH FRONTAL UNBELTED 5THS
2009 CHEVROLET COBALT (C90106)

Test Date: 03/31/09
Speed: 23.2 mph (37.3 km/h)

**PASSENGER NECK FX (N) vs TIME (ms)**
- Max: 1495.5 N
- Tmax: 94.3 ms
- Min: -175.2 N
- Tmin: 47.5 ms

**PASSENGER NECK FY (N) vs TIME (ms)**
- Max: 665.8 N
- Tmax: 115.8 ms
- Min: -273.5 N
- Tmin: 51.8 ms

**PASSENGER NECK FZ (N) vs TIME (ms)**
- Max: 307.48 N
- Tmax: 170.0 ms
- Min: -926.1 N
- Tmin: 69.4 ms

**PASSENGER NECK FResultant (N) vs TIME (ms)**
- Max: 1683.8 N
- Tmax: 89.8 ms
- Min: 0.2 N
- Tmin: 0.0 ms
23 MPH FRONTAL UNBELTED 5THS
2009 CHEVROLET COBALT (C90106)

Test Date: 03/31/09
Speed: 23.2 mph (37.3 km/h)

PASSENGER NECK MX (Nm) vs TIME (ms)
Max: 23.8 Nm
Tmax: 123.3 ms
Min: -5.6 Nm
Tmin: 176.1 ms
CFC 600

PASSENGER NECK MY (Nm) vs TIME (ms)
Max: 98.4 Nm
Tmax: 89.0 ms
Min: -14.8 Nm
Tmin: 125.7 ms
CFC 600

PASSENGER NECK MZ (Nm) vs TIME (ms)
Max: 36.6 Nm
Tmax: 123.4 ms
Min: -10.5 Nm
Tmin: 208.8 ms
CFC 600

PASSENGER NECK MResultant (Nm) vs TIME (ms)
Max: 98.6 Nm
Tmax: 89.0 ms
Min: 0.0 Nm
Tmin: 0.0 ms
CFC 600
23 MPH FRONTAL UNBELTED 5THS
2009 CHEVROLET COBALT (C90106)

Speed: 23.2 mph (37.3 km/h)

Max: 1.9 G's
Tmax: 210.5 ms
Min: -34.2 G's
Tmin: 88.7 ms

Max: 5.6 G's
Tmax: 84.3 ms
Min: -4.2 G's
Tmin: 113.7 ms

Max: 13.7 G's
Tmax: 103.4 ms
Min: -11.6 G's
Tmin: 76.4 ms

Max: 35.2 G's
Tmax: 88.8 ms
Min: 0.0 G's
Tmin: 3.8 ms

CFC 180
23 MPH FRONTAL UNBELTED 5THS
2009 CHEVROLET COBALT (C90106)

Test Date: 03/31/09
Speed: 23.2 mph (37.3 km/h)

PASSENGER CHEST X Velocity (kph) vs TIME (ms)
Max: 37.3 kph
Tmax: 0.0 ms
Min: -10.0 kph
Tmin: 174.5 ms
CFC 180

PASSENGER CHEST Y Velocity (kph) vs TIME (ms)
Max: 1.6 kph
Tmax: 86.9 ms
Min: -2.9 kph
Tmin: 300.0 ms
CFC 180

PASSENGER CHEST Z Velocity (kph) vs TIME (ms)
Max: 9.4 kph
Tmax: 256.6 ms
Min: -8.4 kph
Tmin: 85.9 ms
CFC 180

PASSENGER CHEST DISPLACEMENT (mm) vs TIME (ms)
Max: 1.3 mm
Tmax: 72.2 ms
Min: -2.8 mm
Tmin: 88.0 ms
CFC 600
23 MPH FRONTAL UNBELTED 5THS Test Date: 03/31/09
2009 CHEVROLET COBALT (C90106)
Speed: 23.2 mph (37.3 km/h)

PASSENGER LEFT FEMUR (N) vs TIME (ms)
Max: 185.4 N
Tmax: 33.6 ms
Min: -4136.9 N
Tmin: 67.3 ms
CFC 600

PASSENGER RIGHT FEMUR (N) vs TIME (ms)
Max: 89.9 N
Tmax: 33.6 ms
Min: -3630.2 N
Tmin: 86.0 ms
CFC 600
23 MPH FRONTAL UNBELTED 5THS
2009 CHEVROLET COBALT (C90106)

Speed: 23.2 mph (37.3 km/h)

Max: 0.1 G's
Tmax: 0.0 ms
Min: -76.9 G's
Tmin: 57.5 ms
CFC 60

Max: 37.3 kph
Tmax: 0.0 ms
Min: -47.5 kph
Tmin: 100.0 ms
CFC 180

Max: 15.9 G's
Tmax: 64.4 ms
Min: -105.6 G's
Tmin: 48.7 ms
CFC 60

Max: 37.4 kph
Tmax: 1.7 ms
Min: -20.9 kph
Tmin: 157.6 ms
CFC 180

No valid data collected after 100 msec.
## APPENDIX B

**LOW RISK TEST DATA**

### TABLE OF DATA PLOTS

<table>
<thead>
<tr>
<th>Figure No.</th>
<th>Description</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5th Fem. P1 Driver Head X Acceleration vs. Time</td>
<td>B-1</td>
</tr>
<tr>
<td>2</td>
<td>5th Fem. P1 Driver Head Y Acceleration vs. Time</td>
<td>B-1</td>
</tr>
<tr>
<td>3</td>
<td>5th Fem. P1 Driver Head Z Acceleration vs. Time</td>
<td>B-1</td>
</tr>
<tr>
<td>4</td>
<td>5th Fem. P1 Driver Head Resultant Acceleration vs. Time</td>
<td>B-1</td>
</tr>
<tr>
<td>5</td>
<td>5th Fem. P1 Driver Head X Velocity vs. Time</td>
<td>B-2</td>
</tr>
<tr>
<td>6</td>
<td>5th Fem. P1 Driver Head Y Velocity vs. Time</td>
<td>B-2</td>
</tr>
<tr>
<td>7</td>
<td>5th Fem. P1 Driver Head Z Velocity vs. Time</td>
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</tr>
<tr>
<td>8</td>
<td>5th Fem. P1 Driver Neck Force X vs. Time</td>
<td>B-3</td>
</tr>
<tr>
<td>9</td>
<td>5th Fem. P1 Driver Neck Force Y vs. Time</td>
<td>B-3</td>
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<tr>
<td>10</td>
<td>5th Fem. P1 Driver Neck Force Z vs. Time</td>
<td>B-3</td>
</tr>
<tr>
<td>11</td>
<td>5th Fem. P1 Driver Neck Force Resultant vs. Time</td>
<td>B-3</td>
</tr>
<tr>
<td>12</td>
<td>5th Fem. P1 Driver Neck Moment X vs. Time</td>
<td>B-4</td>
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<tr>
<td>13</td>
<td>5th Fem. P1 Driver Neck Moment Y vs. Time</td>
<td>B-4</td>
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<tr>
<td>14</td>
<td>5th Fem. P1 Driver Neck Moment Z vs. Time</td>
<td>B-4</td>
</tr>
<tr>
<td>15</td>
<td>5th Fem. P1 Driver Occipital Condyle Moment vs. Time</td>
<td>B-4</td>
</tr>
<tr>
<td>16</td>
<td>5th Fem. P1 Driver Chest X Acceleration vs. Time</td>
<td>B-5</td>
</tr>
<tr>
<td>17</td>
<td>5th Fem. P1 Driver Chest Y Acceleration vs. Time</td>
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<tr>
<td>18</td>
<td>5th Fem. P1 Driver Chest Z Acceleration vs. Time</td>
<td>B-5</td>
</tr>
<tr>
<td>19</td>
<td>5th Fem. P1 Driver Chest Resultant Acceleration vs. Time</td>
<td>B-5</td>
</tr>
<tr>
<td>20</td>
<td>5th Fem. P1 Driver Chest X Velocity vs. Time</td>
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<tr>
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<td>5th Fem. P1 Driver Chest Y Velocity vs. Time</td>
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</tr>
<tr>
<td>22</td>
<td>5th Fem. P1 Driver Chest Z Velocity vs. Time</td>
<td>B-6</td>
</tr>
<tr>
<td>23</td>
<td>5th Fem. P1 Driver Chest Displacement vs. Time</td>
<td>B-6</td>
</tr>
<tr>
<td>24</td>
<td>5th Fem. P1 Driver Left Femur Force vs. Time</td>
<td>B-7</td>
</tr>
<tr>
<td>25</td>
<td>5th Fem. P1 Driver Right Femur Force vs. Time</td>
<td>B-7</td>
</tr>
<tr>
<td>26</td>
<td>Fire Voltage #1 vs. Time</td>
<td>B-8</td>
</tr>
<tr>
<td>27</td>
<td>Fire Current #1 vs. Time</td>
<td>B-8</td>
</tr>
</tbody>
</table>
Figure No. 28. Fire Voltage #2 vs. Time

Figure No. 29. Fire Current #2 vs. Time

Figure No. 30. 5th Fem. P1 Driver Nij (N_{TF}) vs. Time

Figure No. 31. 5th Fem. P1 Driver Nij (N_{TE}) vs. Time

Figure No. 32. 5th Fem. P1 Driver Nij (N_{CF}) vs. Time

Figure No. 33. 5th Fem. P1 Driver Nij (N_{CE}) vs. Time

Figure No. 34. 5th Fem. P2 Driver Head X Acceleration vs. Time

Figure No. 35. 5th Fem. P2 Driver Head Y Acceleration vs. Time

Figure No. 36. 5th Fem. P2 Driver Head Z Acceleration vs. Time

Figure No. 37. 5th Fem. P2 Driver Head Resultant Acceleration vs. Time

Figure No. 38. 5th Fem. P2 Driver Head X Velocity vs. Time

Figure No. 39. 5th Fem. P2 Driver Head Y Velocity vs. Time

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LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (5th P1)

Test Date: 3/9/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 225ms

5TH FEM. DRIVER HEAD X (G's) vs TIME (ms)
Max: 10.3 G's
Tmax: 221.5 ms
Min: -29.7 G's
Tmin: 7.2 ms
CFC 1000

5TH FEM. DRIVER HEAD Y (G's) vs TIME (ms)
Max: 7.9 G's
Tmax: 7.5 ms
Min: -12.2 G's
Tmin: 8.4 ms
CFC 1000

5TH FEM. DRIVER HEAD Z (G's) vs TIME (ms)
Max: 18.9 G's
Tmax: 8.3 ms
Min: -4.4 G's
Tmin: 7.4 ms
CFC 1000

5TH FEM. DRIVER HEAD Resultant (G's) vs TIME (ms)
Max: 33.8 G's
Tmax: 8.3 ms
Min: 0.1 G's
Tmin: 0.1 ms
CFC 1000
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (5th P1)
Test Date: 3/9/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 225ms

5TH FEM. DRIVER HEAD X Velocity (kph) vs TIME (ms)
- Max: 0.0 kph
- Tmax: 5.7 ms
- Min: -15.7 kph
- Tmin: 74.4 ms
- CFC 180

5TH FEM. DRIVER HEAD Y Velocity (kph) vs TIME (ms)
- Max: 0.4 kph
- Tmax: 221.2 ms
- Min: -0.2 kph
- Tmin: 10.1 ms
- CFC 180

5TH FEM. DRIVER HEAD Z Velocity (kph) vs TIME (ms)
- Max: 23.9 kph
- Tmax: 225.0 ms
- Min: 0.0 kph
- Tmin: 0.1 ms
- CFC 180
5TH FEM. DRIVER NECK FX (N) vs TIME (ms)

Max: 437.0 N
Tmax: 8.8 ms
Min: -26.6 N
Tmin: 65.9 ms
CFC 1000

5TH FEM. DRIVER NECK FY (N) vs TIME (ms)

Max: 63.1 N
Tmax: 8.9 ms
Min: -88.2 N
Tmin: 7.6 ms
CFC 1000

5TH FEM. DRIVER NECK FZ (N) vs TIME (ms)

Max: 323.6 N
Tmax: 40.3 ms
Min: -119.7 N
Tmin: 0.3 ms
CFC 1000

5TH FEM. DRIVER NECK FResultant (N) vs TIME (ms)

Max: 506.0 N
Tmax: 8.0 ms
Min: 9.0 N
Tmin: 1.8 ms
CFC 1000
Injury Values Calculated between 0ms and 225ms

5TH FEM. DRIVER NECK MX (Nm) vs TIME (ms)
Max: 2.4 Nm
Tmax: 7.7 ms
Min: -3.2 Nm
Tmin: 13.0 ms
CFC 600

5TH FEM. DRIVER NECK MY (Nm) vs TIME (ms)
Max: 39.4 Nm
Tmax: 36.6 ms
Min: -9.9 Nm
Tmin: 102.7 ms
CFC 600

5TH FEM. DRIVER NECK MZ (Nm) vs TIME (ms)
Max: 1.5 Nm
Tmax: 21.0 ms
Min: -1.3 Nm
Tmin: 63.6 ms
CFC 600

Drv. Occipital Condyle Moment (Nm) vs TIME (ms)
Max: 33.8 Nm
Tmax: 37.1 ms
Min: -10.4 Nm
Tmin: 125.5 ms
CFC 600
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (5th P1)

Test Date: 3/9/09
Speed: 0.0 mph \( (0.0 \text{ km/h}) \)

Injury Values Calculated between 0ms and 225ms

**5TH FEM. DRIVER CHEST X (G's) vs TIME (ms)**
- Max: 3.5 G's
- Tmax: 67.9 ms
- Min: -9.7 G's
- Tmin: 33.8 ms
- CFC 180

**5TH FEM. DRIVER CHEST Y (G's) vs TIME (ms)**
- Max: 0.6 G's
- Tmax: 22.5 ms
- Min: -1.0 G's
- Tmin: 14.9 ms
- CFC 180

**5TH FEM. DRIVER CHEST Z (G's) vs TIME (ms)**
- Max: 4.5 G's
- Tmax: 39.0 ms
- Min: -2.5 G's
- Tmin: 8.6 ms
- CFC 180

**5TH FEM. DRIVER CHEST Resultant (G's) vs TIME (ms)**
- Max: 10.0 G's
- Tmax: 34.0 ms
- Min: 0.1 G's
- Tmin: 5.4 ms
- CFC 180
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (5th P1)

Test Date: 3/9/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 225ms

5TH FEM. DRIVER CHEST X Velocity (kph) vs TIME (ms)
Max: 0.0 kph
Tmax: 7.8 ms
Min: -7.0 kph
Tmin: 52.5 ms
CFC 180

5TH FEM. DRIVER CHEST Y Velocity (kph) vs TIME (ms)
Max: 0.0 kph
Tmax: 9.5 ms
Min: -0.3 kph
Tmin: 57.3 ms
CFC 180

5TH FEM. DRIVER CHEST Z Velocity (kph) vs TIME (ms)
Max: 6.9 kph
Tmax: 225.0 ms
Min: -0.3 kph
Tmin: 11.5 ms
CFC 180

5TH FEM. DRIVER CHEST DISPLACEMENT (mm) vs TIME (ms)
Max: -0.0 mm
Tmax: 0.1 ms
Min: -6.4 mm
Tmin: 41.7 ms
CFC 600

B-6
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (5th P1)

Test Date: 3/9/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 225ms

5TH FEM. DRIVER LEFT FEMUR (N) vs TIME (ms)
Max: 183.5 N
Tmax: 38.2 ms
Min: -57.2 N
Tmin: 14.0 ms
CFC 600

5TH FEM. DRIVER RIGHT FEMUR (N) vs TIME (ms)
Max: 142.1 N
Tmax: 38.2 ms
Min: -68.3 N
Tmin: 14.8 ms
CFC 600
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (5th P1)

Test Date: 3/9/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 225ms

**FIRE VOLTAGE #1 (Volts) vs TIME (ms)**
- Max: 15.6 Volts
- Tmax: 0.3 ms
- Min: -0.2 Volts
- Tmin: 102.3 ms

**FIRE CURRENT #1 (Amps) vs TIME (ms)**
- Max: 9.6 Amps
- Tmax: 0.4 ms
- Min: -0.0 Amps
- Tmin: 10.4 ms

**FIRE VOLTAGE #2 (Volts) vs TIME (ms)**
- Max: 17.0 Volts
- Tmax: 100.4 ms
- Min: -1.1 Volts
- Tmin: 110.3 ms

**FIRE CURRENT #2 (Amps) vs TIME (ms)**
- Max: 2.2 Amps
- Tmax: 100.2 ms
- Min: -0.1 Amps
- Tmin: 99.8 ms

CFC 1000
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (5th P1)

Test Date: 3/9/09
Speed: 0.0 mph (0.0 km/h)

0 20 40 60 80 100 120 140 160 180 200 220

Max: 0.3
Tmax: 39.2 ms
Min: 0.0
Tmin: 0.1 ms
CFC 600

Drv. nij (NTF) () vs TIME SPECIAL CHS (ms)

Max: 0.2
Tmax: 102.9 ms
Min: 0.0
Tmin: 0.1 ms
CFC 600

Drv. nij (NTE) () vs TIME SPECIAL CHS (ms)

Max: 0.2
Tmax: 13.5 ms
Min: 0.0
Tmin: 0.5 ms
CFC 600

Drv. nij (NCF) () vs TIME SPECIAL CHS (ms)

Max: 0.0
Tmax: 0.9 ms
Min: 0.0
Tmin: 0.1 ms
CFC 600

Drv. nij (NCE) () vs TIME SPECIAL CHS (ms)
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (5th P2)

Test Date: 3/9/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 225ms

5TH FEM. DRIVER HEAD X (G's) vs TIME (ms)
Max: 17.4 G's
Tmax: 75.2 ms
Min: -10.3 G's
Tmin: 20.4 ms
CFC 1000

5TH FEM. DRIVER HEAD Y (G's) vs TIME (ms)
Max: 1.4 G's
Tmax: 78.8 ms
Min: -1.6 G's
Tmin: 10.0 ms
CFC 1000

5TH FEM. DRIVER HEAD Z (G's) vs TIME (ms)
Max: 11.7 G's
Tmax: 11.1 ms
Min: -3.4 G's
Tmin: 8.9 ms
CFC 1000

5TH FEM. DRIVER HEAD Resultant (G's) vs TIME (ms)
Max: 17.7 G's
Tmax: 75.2 ms
Min: 0.0 G's
Tmin: 0.9 ms
CFC 1000
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (5th P2)

Test Date: 3/9/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 225ms

5TH FEM. DRIVER HEAD X Velocity (kph) vs TIME (ms)
Max: 0.0 kph
Tmax: 7.9 ms
Min: -9.2 kph
Tmin: 69.6 ms
CFC 180

5TH FEM. DRIVER HEAD Y Velocity (kph) vs TIME (ms)
Max: 1.6 kph
Tmax: 168.0 ms
Min: -0.1 kph
Tmin: 16.6 ms
CFC 180

5TH FEM. DRIVER HEAD Z Velocity (kph) vs TIME (ms)
Max: 4.9 kph
Tmax: 81.0 ms
Min: -0.0 kph
Tmin: 8.9 ms
CFC 180
Injury Values Calculated between 0ms and 225ms

**5TH FEM. DRIVER NECK MX (Nm) vs TIME (ms)**
- Max: 2.8 Nm
- Tmax: 73.0 ms
- Min: -2.9 Nm
- Tmin: 18.7 ms

**5TH FEM. DRIVER NECK MY (Nm) vs TIME (ms)**
- Max: 13.2 Nm
- Tmax: 84.3 ms
- Min: -19.2 Nm
- Tmin: 17.9 ms

**5TH FEM. DRIVER NECK MZ (Nm) vs TIME (ms)**
- Max: 0.4 Nm
- Tmax: 10.0 ms
- Min: -3.4 Nm
- Tmin: 44.9 ms

**Drv. Occipital Condyle Moment (Nm) vs TIME (ms)**
- Max: 12.9 Nm
- Tmax: 83.5 ms
- Min: -14.3 Nm
- Tmin: 18.2 ms
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (5th P2)

Test Date: 3/9/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 225ms

5TH FEM. DRIVER CHEST X (G's) vs TIME (ms)
Max: 2.3 G's
Tmax: 20.0 ms
Min: -18.2 G's
Tmin: 10.9 ms
CFC 180

5TH FEM. DRIVER CHEST Y (G's) vs TIME (ms)
Max: 2.5 G's
Tmax: 9.8 ms
Min: -1.9 G's
Tmin: 14.4 ms
CFC 180

5TH FEM. DRIVER CHEST Z (G's) vs TIME (ms)
Max: 4.4 G's
Tmax: 12.2 ms
Min: -1.6 G's
Tmin: 75.5 ms
CFC 180

5TH FEM. DRIVER CHEST Resultant (G's) vs TIME (ms)
Max: 18.4 G's
Tmax: 10.9 ms
Min: 0.0 G's
Tmin: 2.3 ms
CFC 180
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (5th P2)

Test Date: 3/9/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 225ms

5TH FEM. DRIVER CHEST X Velocity (kph) vs TIME (ms)
- Max: 0.0 kph
- Tmax: 8.3 ms
- Min: -5.4 kph
- Tmin: 53.4 ms
- CFC 180

5TH FEM. DRIVER CHEST Y Velocity (kph) vs TIME (ms)
- Max: 1.2 kph
- Tmax: 57.2 ms
- Min: -0.0 kph
- Tmin: 7.8 ms
- CFC 180

5TH FEM. DRIVER CHEST Z Velocity (kph) vs TIME (ms)
- Max: 2.6 kph
- Tmax: 90.7 ms
- Min: 0.0 kph
- Tmin: 0.1 ms
- CFC 180

5TH FEM. DRIVER CHEST DISPLACEMENT (mm) vs TIME (ms)
- Max: 0.0 mm
- Tmax: 4.8 ms
- Min: -11.2 mm
- Tmin: 13.0 ms
- CFC 600

B-15
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (5th P2)

Test Date: 3/9/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 225ms

5TH FEM. DRIVER LEFT FEMUR (N) vs TIME (ms)

Max: 220.8 N
Tmax: 21.3 ms
Min: -23.3 N
Tmin: 217.2 ms
CFC 600

5TH FEM. DRIVER RIGHT FEMUR (N) vs TIME (ms)

Max: 181.0 N
Tmax: 18.9 ms
Min: -14.7 N
Tmin: 9.7 ms
CFC 600
Injury Values Calculated between 0ms and 225ms

FIRE VOLTAGE #1 (Volts) vs TIME (ms)

Max: 17.2 Volts
Tmax: 0.3 ms
Min: -1.0 Volts
Tmin: 10.3 ms
CFC 1000

FIRE CURRENT #1 (Amps) vs TIME (ms)

Max: 2.4 Amps
Tmax: 0.1 ms
Min: -0.1 Amps
Tmin: 10.3 ms
CFC 1000

FIRE VOLTAGE #2 (Volts) vs TIME (ms)

Max: 17.1 Volts
Tmax: 100.3 ms
Min: -1.1 Volts
Tmin: 110.3 ms
CFC 1000

FIRE CURRENT #2 (Amps) vs TIME (ms)

Max: 2.4 Amps
Tmax: 100.1 ms
Min: -0.1 Amps
Tmin: 99.7 ms
CFC 1000
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (5th P2)

Test Date: 3/9/09
Speed: 0.0 mph (0.0 km/h)

Drv. nij (NTF) () vs TIME SPECIAL CHS (ms)
Max: 0.1
Tmax: 75.9 ms
Min: 0.0
Tmin: 0.1 ms
CFC 600

Drv. nij (NTE) () vs TIME SPECIAL CHS (ms)
Max: 0.3
Tmax: 16.2 ms
Min: 0.0
Tmin: 0.2 ms
CFC 600

Drv. nij (NCF) () vs TIME SPECIAL CHS (ms)
Max: 0.1
Tmax: 86.8 ms
Min: 0.0
Tmin: 0.1 ms
CFC 600

Drv. nij (NCE) () vs TIME SPECIAL CHS (ms)
Max: 0.1
Tmax: 164.9 ms
Min: 0.0
Tmin: 0.1 ms
CFC 600

B-18
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (3YO P1)

Test Date: 3/9/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 100ms

3YR OLD PASSENGER HEAD X (G's) vs TIME (ms)

Max: 4.4 G's
Tmax: 5.9 ms
Min: -69.8 G's
Tmin: 8.1 ms
CFC 1000

3YR OLD PASSENGER HEAD Y (G's) vs TIME (ms)

Max: 21.5 G's
Tmax: 8.3 ms
Min: -7.4 G's
Tmin: 11.0 ms
CFC 1000

3YR OLD PASSENGER HEAD Z (G's) vs TIME (ms)

Max: 18.8 G's
Tmax: 11.3 ms
Min: -5.3 G's
Tmin: 6.9 ms
CFC 1000

3YR OLD PASSENGER HEAD Resultant (G's) vs TIME (ms)

Max: 74.4 G's
Tmax: 8.1 ms
Min: 0.1 G's
Tmin: 1.0 ms
CFC 1000
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (3YO P1)

Test Date: 3/9/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 100ms

3YR OLD PASSENGER HEAD X Velocity (kph) vs TIME (ms)
- Max: 0.0 kph
- Tmax: 0.9 ms
- Min: -24.2 kph
- Tmin: 67.2 ms
- CFC 180

3YR OLD PASSENGER HEAD Y Velocity (kph) vs TIME (ms)
- Max: 1.3 kph
- Tmax: 95.7 ms
- Min: -0.6 kph
- Tmin: 39.5 ms
- CFC 180

3YR OLD PASSENGER HEAD Z Velocity (kph) vs TIME (ms)
- Max: 23.8 kph
- Tmax: 100.0 ms
- Min: 0.0 kph
- Tmin: 7.0 ms
- CFC 180

B-20
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (3YO P1)

Test Date: 3/9/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 100ms

3YR OLD PASSENGER NECK FX (N) vs TIME (ms)
Max: 541.7 N
Tmax: 8.4 ms
Min: -14.6 N
Tmin: 0.5 ms
CFC 1000

3YR OLD PASSENGER NECK FY (N) vs TIME (ms)
Max: 39.1 N
Tmax: 67.3 ms
Min: -168.3 N
Tmin: 8.8 ms
CFC 1000

3YR OLD PASSENGER NECK FZ (N) vs TIME (ms)
Max: 317.3 N
Tmax: 8.9 ms
Min: -295.1 N
Tmin: 48.9 ms
CFC 1000

3YR OLD PASSENGER NECK FResultant (N) vs TIME (ms)
Max: 629.7 N
Tmax: 8.4 ms
Min: 2.3 N
Tmin: 1.0 ms
CFC 1000
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (3YO P1)

Test Date: 3/9/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 100ms

3YR OLD PASSENGER NECK MX (Nm) vs TIME (ms)
Max: 12.8 Nm
Tmax: 54.7 ms
Min: -0.6 Nm
Tmin: 6.4 ms
CFC 600

3YR OLD PASSENGER NECK MY (Nm) vs TIME (ms)
Max: 20.4 Nm
Tmax: 11.8 ms
Min: -5.8 Nm
Tmin: 92.2 ms
CFC 600

3YR OLD PASSENGER NECK MZ (Nm) vs TIME (ms)
Max: 2.5 Nm
Tmax: 67.0 ms
Min: -5.8 Nm
Tmin: 24.0 ms
CFC 600

Pass. Occipital Condyle Moment (Nm) vs TIME (ms)
Max: 20.4 Nm
Tmax: 11.8 ms
Min: -5.8 Nm
Tmin: 92.2 ms
CFC 600
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (3YO P1)
Test Date: 3/9/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 100ms

3YR OLD PASSENGER CHEST X (G's) vs TIME (ms)
Max: 1.8 G's
Tmax: 39.1 ms
Min: -17.0 G's
Tmin: 13.6 ms
CFC 180

3YR OLD PASSENGER CHEST Y (G's) vs TIME (ms)
Max: 3.2 G's
Tmax: 11.1 ms
Min: -2.4 G's
Tmin: 63.5 ms
CFC 180

3YR OLD PASSENGER CHEST Z (G's) vs TIME (ms)
Max: 7.8 G's
Tmax: 12.5 ms
Min: -6.6 G's
Tmin: 8.3 ms
CFC 180

3YR OLD PASSENGER CHEST Resultant (G's) vs TIME (ms)
Max: 17.8 G's
Tmax: 13.3 ms
Min: 0.0 G's
Tmin: 1.6 ms
CFC 180
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (3YO P1)

Test Date: 3/9/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 100ms

3YR OLD PASSENGER CHEST X Velocity (kph) vs TIME (ms)
- Max: 0.0 kph
- Tmax: 8.5 ms
- Min: -11.2 kph
- Tmin: 100.0 ms
- CFC 180

3YR OLD PASSENGER CHEST Y Velocity (kph) vs TIME (ms)
- Max: 0.6 kph
- Tmax: 56.4 ms
- Min: -0.9 kph
- Tmin: 93.2 ms
- CFC 180

3YR OLD PASSENGER CHEST Z Velocity (kph) vs TIME (ms)
- Max: 4.1 kph
- Tmax: 100.0 ms
- Min: -0.6 kph
- Tmin: 11.1 ms
- CFC 180

3YR OLD PASSENGER CHEST DISPLACEMENT (mm) vs TIME (ms)
- Max: 0.6 mm
- Tmax: 22.5 ms
- Min: -3.3 mm
- Tmin: 15.1 ms
- CFC 600
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (3YO P1)

Test Date: 3/9/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 100ms

FIRE VOLTAGE #1 (Volts) vs TIME (ms)
Max: 14.8 Volts
Tmax: 9.8 ms
Min: -1.0 Volts
Tmin: 10.3 ms
CFC 1000

FIRE CURRENT #1 (Amps) vs TIME (ms)
Max: 14.4 Amps
Tmax: 0.3 ms
Min: -0.7 Amps
Tmin: 0.8 ms
CFC 1000

FIRE VOLTAGE #2 (Volts) vs TIME (ms)
Max: 14.0 Volts
Tmax: 40.3 ms
Min: -0.5 Volts
Tmin: 50.3 ms
CFC 1000

FIRE CURRENT #2 (Amps) vs TIME (ms)
Max: 18.0 Amps
Tmax: 40.4 ms
Min: -0.5 Amps
Tmin: 39.9 ms
CFC 1000
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (3YO P1)
Test Date: 3/9/09
Speed: 0.0 mph (0.0 km/h)

PASS. nij (NTF) () vs TIME SPECIAL CHS (ms)
Max: 0.4
Tmax: 11.0 ms
Min: 0.0
Tmin: 0.3 ms
CFC 600

Pass. nij (NTE) () vs TIME SPECIAL CHS (ms)
Max: 0.3
Tmax: 100.0 ms
Min: 0.0
Tmin: 0.1 ms
CFC 600

Pass. nij (NCF) () vs TIME SPECIAL CHS (ms)
Max: 0.3
Tmax: 12.3 ms
Min: 0.0
Tmin: 0.1 ms
CFC 600

Pass. nij (NCE) () vs TIME SPECIAL CHS (ms)
Max: 0.2
Tmax: 47.8 ms
Min: 0.0
Tmin: 0.1 ms
CFC 600
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (3YO P2)

Test Date: 3/9/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 100ms

3YR OLD PASSENGER HEAD X (G's) vs TIME (ms)
Max: 13.8 G's
Tmax: 50.3 ms
Min: -52.3 G's
Tmin: 8.6 ms
CFC 1000

3YR OLD PASSENGER HEAD Y (G's) vs TIME (ms)
Max: 21.9 G's
Tmax: 9.2 ms
Min: -16.3 G's
Tmin: 7.3 ms
CFC 1000

3YR OLD PASSENGER HEAD Z (G's) vs TIME (ms)
Max: 15.4 G's
Tmax: 7.2 ms
Min: -11.1 G's
Tmin: 9.5 ms
CFC 1000

3YR OLD PASSENGER HEAD Resultant (G's) vs TIME (ms)
Max: 52.4 G's
Tmax: 8.6 ms
Min: 0.1 G's
Tmin: 0.1 ms
CFC 1000
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (3YO P2)

Test Date: 3/9/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 100ms

3YR OLD PASSENGER HEAD X Velocity (kph) vs TIME (ms)

Max: 6.4 kph
Tmax: 68.8 ms
Min: -4.2 kph
Tmin: 18.2 ms
CFC 180

3YR OLD PASSENGER HEAD Y Velocity (kph) vs TIME (ms)

Max: 2.1 kph
Tmax: 96.4 ms
Min: -0.2 kph
Tmin: 8.1 ms
CFC 180

3YR OLD PASSENGER HEAD Z Velocity (kph) vs TIME (ms)

Max: 4.8 kph
Tmax: 70.5 ms
Min: -0.0 kph
Tmin: 0.1 ms
CFC 180
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (3YO P2)

Test Date: 3/9/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 100ms

3YR OLD PASSENGER NECK FX (N) vs TIME (ms)
Max: 81.0 N
Tmax: 7.3 ms
Min: -147.6 N
Tmin: 66.9 ms
CFC 1000

3YR OLD PASSENGER NECK FY (N) vs TIME (ms)
Max: 63.0 N
Tmax: 54.4 ms
Min: -27.3 N
Tmin: 6.7 ms
CFC 1000

3YR OLD PASSENGER NECK FZ (N) vs TIME (ms)
Max: 44.2 N
Tmax: 16.5 ms
Min: -654.7 N
Tmin: 54.1 ms
CFC 1000

3YR OLD PASSENGER NECK FResultant (N) vs TIME (ms)
Max: 661.2 N
Tmax: 54.1 ms
Min: 3.0 N
Tmin: 0.3 ms
CFC 1000
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (3YO P2)

Test Date: 3/9/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 100ms

3YR OLD PASSENGER CHEST X (G's) vs TIME (ms)
Max: 2.6 G's
Tmax: 60.1 ms
Min: -3.2 G’s
Tmin: 8.2 ms
CFC 180

3YR OLD PASSENGER CHEST Y (G's) vs TIME (ms)
Max: 0.9 G’s
Tmax: 66.8 ms
Min: -1.1 G’s
Tmin: 52.3 ms
CFC 180

3YR OLD PASSENGER CHEST Z (G’s) vs TIME (ms)
Max: 7.4 G’s
Tmax: 52.1 ms
Min: -6.2 G’s
Tmin: 80.6 ms
CFC 180

3YR OLD PASSENGER CHEST Resultant (G's) vs TIME (ms)
Max: 7.5 G’s
Tmax: 52.2 ms
Min: 0.2 G’s
Tmin: 0.1 ms
CFC 180
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (3YO P2)

Test Date: 3/9/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 100ms

3YR OLD PASSENGER CHEST X Velocity (kph) vs TIME (ms)
- Max: 0.1 kph
- Tmax: 83.3 ms
- Min: -1.2 kph
- Tmin: 44.8 ms
- CFC 180

3YR OLD PASSENGER CHEST Y Velocity (kph) vs TIME (ms)
- Max: 0.6 kph
- Tmax: 84.3 ms
- Min: -0.1 kph
- Tmin: 14.5 ms
- CFC 180

3YR OLD PASSENGER CHEST Z Velocity (kph) vs TIME (ms)
- Max: 3.3 kph
- Tmax: 68.9 ms
- Min: -1.4 kph
- Tmin: 100.0 ms
- CFC 180

3YR OLD PASSENGER CHEST DISPLACEMENT (mm) vs TIME (ms)
- Max: 0.8 mm
- Tmax: 57.3 ms
- Min: -0.2 mm
- Tmin: 20.6 ms
- CFC 600
Injury Values Calculated between 0ms and 100ms

FIRE VOLTAGE #1 (Volts) vs TIME (ms)
Max: 14.0 Volts
Tmax: 0.3 ms
Min: -0.3 Volts
Tmin: 39.9 ms
CFC 1000

FIRE CURRENT #1 (Amps) vs TIME (ms)
Max: 19.7 Amps
Tmax: 0.4 ms
Min: -1.4 Amps
Tmin: 40.4 ms
CFC 1000

FIRE VOLTAGE #2 (Volts) vs TIME (ms)
Max: 13.2 Volts
Tmax: 40.3 ms
Min: -0.5 Volts
Tmin: 39.8 ms
CFC 1000

FIRE CURRENT #2 (Amps) vs TIME (ms)
Max: 19.7 Amps
Tmax: 40.4 ms
Min: -0.4 Amps
Tmin: 39.9 ms
CFC 1000
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (3YO P2)

Test Date: 3/9/09
Speed: 0.0 mph (0.0 km/h)

PASS. nij (NTF) () vs TIME SPECIAL CHS (ms)

Max: 0.0
Tmax: 0.1 ms
Min: 0.0
Tmin: 0.1 ms
CFC 600

Pass. nij (NTE) () vs TIME SPECIAL CHS (ms)

Max: 0.1
Tmax: 16.4 ms
Min: 0.0
Tmin: 0.1 ms
CFC 600

Pass. nij (NCF) () vs TIME SPECIAL CHS (ms)

Max: 0.1
Tmax: 8.3 ms
Min: 0.0
Tmin: 8.9 ms
CFC 600

Pass. nij (NCE) () vs TIME SPECIAL CHS (ms)

Max: 0.6
Tmax: 57.2 ms
Min: 0.0
Tmin: 0.1 ms
CFC 600
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (6YO P1)

Test Date: 3/10/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 100ms

6YR OLD PASSENGER HEAD X (G's) vs TIME (ms)
Max: 1.0 G's
Tmax: 88.4 ms
Min: -49.3 G's
Tmin: 8.3 ms
CFC 1000

6YR OLD PASSENGER HEAD Y (G's) vs TIME (ms)
Max: 7.6 G's
Tmax: 13.5 ms
Min: -11.8 G's
Tmin: 51.5 ms
CFC 1000

6YR OLD PASSENGER HEAD Z (G's) vs TIME (ms)
Max: 18.2 G's
Tmax: 9.6 ms
Min: -12.1 G's
Tmin: 7.9 ms
CFC 1000

6YR OLD PASSENGER HEAD Resultant (G's) vs TIME (ms)
Max: 50.5 G's
Tmax: 8.3 ms
Min: 0.2 G's
Tmin: 0.1 ms
CFC 1000
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (6YO P1)

Test Date: 3/10/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 100ms

**6YR OLD PASSENGER HEAD X Velocity (kph) vs TIME (ms)**
- Max: -0.0 kph
- Tmax: 0.1 ms
- Min: -23.9 kph
- Tmin: 82.0 ms
- CFC 180

**6YR OLD PASSENGER HEAD Y Velocity (kph) vs TIME (ms)**
- Max: -0.0 kph
- Tmax: 0.1 ms
- Min: -6.1 kph
- Tmin: 68.6 ms
- CFC 180

**6YR OLD PASSENGER HEAD Z Velocity (kph) vs TIME (ms)**
- Max: 21.2 kph
- Tmax: 100.0 ms
- Min: -0.4 kph
- Tmin: 8.6 ms
- CFC 180
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (6YO P1)

Test Date: 3/10/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 100ms

6YR OLD PASSENGER NECK FX (N) vs TIME (ms)

Max: 342.7 N
Tmax: 8.4 ms
Min: -2.3 N
Tmin: 0.1 ms
CFC 1000

6YR OLD PASSENGER NECK FY (N) vs TIME (ms)

Max: 64.8 N
Tmax: 69.1 ms
Min: -61.1 N
Tmin: 0.6 ms
CFC 1000

6YR OLD PASSENGER NECK FZ (N) vs TIME (ms)

Max: 721.3 N
Tmax: 8.6 ms
Min: -240.4 N
Tmin: 49.3 ms
CFC 1000

6YR OLD PASSENGER NECK FResultant (N) vs TIME (ms)

Max: 780.1 N
Tmax: 8.5 ms
Min: 3.4 N
Tmin: 5.0 ms
CFC 1000
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (6YO P1)

Injury Values Calculated between 0ms and 100ms

6YR OLD PASSENGER NECK MX (Nm) vs TIME (ms)
- Max: 11.3 Nm
- Tmax: 53.4 ms
- Min: -2.3 Nm
- Tmin: 8.2 ms
- CFC 600

6YR OLD PASSENGER NECK MY (Nm) vs TIME (ms)
- Max: 11.3 Nm
- Tmax: 9.8 ms
- Min: -12.6 Nm
- Tmin: 77.9 ms
- CFC 600

6YR OLD PASSENGER NECK MZ (Nm) vs TIME (ms)
- Max: 4.0 Nm
- Tmax: 66.7 ms
- Min: -1.8 Nm
- Tmin: 100.0 ms
- CFC 600

Pass. Occipital Condyle Moment (Nm) vs TIME (ms)
- Max: 7.7 Nm
- Tmax: 10.2 ms
- Min: -13.3 Nm
- Tmin: 77.9 ms
- CFC 600

Test Date: 3/10/09
Speed: 0.0 mph (0.0 km/h)
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (6YO P1)

Test Date: 3/10/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 100ms

6YR OLD PASSENGER CHEST X (G's) vs TIME (ms)

Max: 4.3 G's
Tmax: 16.5 ms
Min: -11.2 G's
Tmin: 11.6 ms
CFC 180

6YR OLD PASSENGER CHEST Y (G's) vs TIME (ms)

Max: 2.8 G's
Tmax: 12.6 ms
Min: -3.1 G's
Tmin: 10.7 ms
CFC 180

6YR OLD PASSENGER CHEST Z (G's) vs TIME (ms)

Max: 6.9 G's
Tmax: 10.5 ms
Min: -10.5 G's
Tmin: 8.6 ms
CFC 180

6YR OLD PASSENGER CHEST Resultant (G's) vs TIME (ms)

Max: 12.1 G's
Tmax: 10.6 ms
Min: 0.1 G's
Tmin: 6.6 ms
CFC 180
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (6YO P1)

Test Date: 3/10/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 100ms

6YR OLD PASSENGER CHEST X Velocity (kph) vs TIME (ms)

-20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

Max: 0.0 kph
Tmax: 8.8 ms
Min: -7.8 kph
Tmin: 100.0 ms
CFC 180

6YR OLD PASSENGER CHEST Y Velocity (kph) vs TIME (ms)

-1.5 -1 -0.5 0 0.5 1 1.5 2

Max: 0.2 kph
Tmax: 54.5 ms
Min: -1.3 kph
Tmin: 99.9 ms
CFC 180

6YR OLD PASSENGER CHEST Z Velocity (kph) vs TIME (ms)

-5 0 5 10 15 20 25 30

Max: 2.5 kph
Tmax: 55.7 ms
Min: -0.7 kph
Tmin: 9.7 ms
CFC 180

6YR OLD PASSENGER CHEST DISPLACEMENT (mm) vs TIME (ms)

-1 -0.5 0 0.5 1 1.5 2

Max: 1.2 mm
Tmax: 25.3 ms
Min: -1.0 mm
Tmin: 58.5 ms
CFC 600

B-40
Injury Values Calculated between 0ms and 100ms

**FIRE VOLTAGE #1 (Volts) vs TIME (ms)**
- Max: 13.9 Volts
- Tmax: 0.3 ms
- Min: -0.3 Volts
- Tmin: 39.9 ms

**CFC 1000**

**FIRE CURRENT #1 (Amps) vs TIME (ms)**
- Max: 19.7 Amps
- Tmax: 0.4 ms
- Min: -1.4 Amps
- Tmin: 40.4 ms

**CFC 1000**

**FIRE VOLTAGE #2 (Volts) vs TIME (ms)**
- Max: 13.3 Volts
- Tmax: 40.3 ms
- Min: -0.5 Volts
- Tmin: 39.8 ms

**CFC 1000**

**FIRE CURRENT #2 (Amps) vs TIME (ms)**
- Max: 20.5 Amps
- Tmax: 40.4 ms
- Min: -0.5 Amps
- Tmin: 39.9 ms

**CFC 1000**
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (6YO P1)

Test Date: 3/10/09
Speed: 0.0 mph (0.0 km/h)

PASS. nij (NTF) () vs TIME SPECIAL CHS (ms)
Max: 0.3
Tmax: 8.8 ms
Min: 0.0
Tmin: 0.1 ms
CFC 600

Pass. nij (NTE) () vs TIME SPECIAL CHS (ms)
Max: 0.5
Tmax: 78.0 ms
Min: 0.0
Tmin: 0.3 ms
CFC 600

Pass. nij (NCF) () vs TIME SPECIAL CHS (ms)
Max: 0.1
Tmax: 20.5 ms
Min: 0.0
Tmin: 0.1 ms
CFC 600

Pass. nij (NCE) () vs TIME SPECIAL CHS (ms)
Max: 0.3
Tmax: 49.2 ms
Min: 0.0
Tmin: 0.1 ms
CFC 600
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (6YO P2)

Test Date: 3/10/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 100ms

6YR OLD PASSENGER HEAD X (G's) vs TIME (ms)
Max: 15.4 G's
Tmax: 50.4 ms
Min: -49.3 G's
Tmin: 6.1 ms
CFC 1000

6YR OLD PASSENGER HEAD Y (G's) vs TIME (ms)
Max: 14.0 G's
Tmax: 8.0 ms
Min: -21.8 G's
Tmin: 6.6 ms
CFC 1000

6YR OLD PASSENGER HEAD Z (G's) vs TIME (ms)
Max: 27.6 G's
Tmax: 6.1 ms
Min: -13.6 G's
Tmin: 8.7 ms
CFC 1000

6YR OLD PASSENGER HEAD Resultant (G's) vs TIME (ms)
Max: 58.1 G's
Tmax: 6.1 ms
Min: 0.1 G's
Tmin: 0.1 ms
CFC 1000
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (6YO P2)
Test Date: 3/10/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 100ms

6YR OLD PASSENGER HEAD X Velocity (kph) vs TIME (ms)
Max: 6.6 kph
Tmax: 66.0 ms
Min: -4.8 kph
Tmin: 15.4 ms
CFC 180

6YR OLD PASSENGER HEAD Y Velocity (kph) vs TIME (ms)
Max: 2.7 kph
Tmax: 100.0 ms
Min: -1.8 kph
Tmin: 55.5 ms
CFC 180

6YR OLD PASSENGER HEAD Z Velocity (kph) vs TIME (ms)
Max: 4.3 kph
Tmax: 66.1 ms
Min: 0.0 kph
Tmin: 0.1 ms
CFC 180
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (6YO P2)

Test Date: 3/10/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 100ms

**6YR OLD PASSENGER NECK FX (N) vs TIME (ms)**
- Max: 94.5 N
- Tmax: 6.4 ms
- Min: -182.9 N
- Tmin: 59.8 ms
- CFC 1000

**6YR OLD PASSENGER NECK FY (N) vs TIME (ms)**
- Max: 74.2 N
- Tmax: 74.5 ms
- Min: -65.5 N
- Tmin: 0.5 ms
- CFC 1000

**6YR OLD PASSENGER NECK FZ (N) vs TIME (ms)**
- Max: 187.5 N
- Tmax: 16.7 ms
- Min: -913.7 N
- Tmin: 53.5 ms
- CFC 1000

**6YR OLD PASSENGER NECK FResultant (N) vs TIME (ms)**
- Max: 926.5 N
- Tmax: 53.5 ms
- Min: 5.3 N
- Tmin: 0.1 ms
- CFC 1000
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (6YO P2)

Test Date: 3/10/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 100ms

**6YR OLD PASSENGER NECK MX (Nm) vs TIME (ms)**
- Max: 11.5 Nm
- Tmax: 53.4 ms
- Min: -0.9 Nm
- Tmin: 13.7 ms

**6YR OLD PASSENGER NECK MY (Nm) vs TIME (ms)**
- Max: 4.7 Nm
- Tmax: 32.4 ms
- Min: -10.7 Nm
- Tmin: 63.0 ms

**6YR OLD PASSENGER NECK MZ (Nm) vs TIME (ms)**
- Max: 0.5 Nm
- Tmax: 0.3 ms
- Min: -6.2 Nm
- Tmin: 68.4 ms

**Pass. Occipital Condyle Moment (Nm) vs TIME (ms)**
- Max: 3.4 Nm
- Tmax: 32.4 ms
- Min: -9.3 Nm
- Tmin: 77.5 ms

CFC 600
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (6YO P2)

Test Date: 3/10/09
Speed: 0.0 mph (0.0 km/h)

Injury Values Calculated between 0ms and 100ms

**6YR OLD PASSENGER CHEST X (G's) vs TIME (ms)**
- Max: 3.2 G's
- Tmax: 42.5 ms
- Min: -4.7 G's
- Tmin: 90.5 ms
- CFC 180

**6YR OLD PASSENGER CHEST Y (G's) vs TIME (ms)**
- Max: 1.8 G's
- Tmax: 52.0 ms
- Min: -1.9 G's
- Tmin: 73.7 ms
- CFC 180

**6YR OLD PASSENGER CHEST Z (G's) vs TIME (ms)**
- Max: 7.3 G's
- Tmax: 51.8 ms
- Min: -4.4 G's
- Tmin: 83.9 ms
- CFC 180

**6YR OLD PASSENGER CHEST Resultant (G's) vs TIME (ms)**
- Max: 7.7 G's
- Tmax: 7.7 ms
- Min: 0.2 G's
- Tmin: 4.1 ms
- CFC 180
LOW RISK DEPLOYMENT
2009 Chevrolet Cobalt (C90106) (6YO P2)

Test Date: 3/10/09
Speed: 0.0 mph (0.0 km/h)

6YR OLD PASSENGER CHEST X Velocity (kph) vs TIME (ms)
Max: 0.7 kph
Tmax: 77.4 ms
Min: -1.6 kph
Tmin: 100.0 ms
CFC 180

6YR OLD PASSENGER CHEST Y Velocity (kph) vs TIME (ms)
Max: 0.6 kph
Tmax: 57.1 ms
Min: -0.3 kph
Tmin: 100.0 ms
CFC 180

6YR OLD PASSENGER CHEST Z Velocity (kph) vs TIME (ms)
Max: 3.7 kph
Tmax: 66.1 ms
Min: -0.8 kph
Tmin: 100.0 ms
CFC 180

6YR OLD PASSENGER CHEST DISPLACEMENT (mm) vs TIME (ms)
Max: 0.5 mm
Tmax: 89.6 ms
Min: -0.3 mm
Tmin: 43.8 ms
CFC 600
Injury Values Calculated between 0ms and 100ms

FIRE VOLTAGE #1 (Volts) vs TIME (ms)
- Max: 14.0 Volts
- Tmax: 0.3 ms
- Min: -0.3 Volts
- Tmin: 39.9 ms
- CFC 1000

FIRE CURRENT #1 (Amps) vs TIME (ms)
- Max: 19.5 Amps
- Tmax: 0.4 ms
- Min: -1.4 Amps
- Tmin: 40.4 ms
- CFC 1000

FIRE VOLTAGE #2 (Volts) vs TIME (ms)
- Max: 13.4 Volts
- Tmax: 40.3 ms
- Min: -0.4 Volts
- Tmin: 39.8 ms
- CFC 1000

FIRE CURRENT #2 (Amps) vs TIME (ms)
- Max: 19.0 Amps
- Tmax: 40.4 ms
- Min: -0.6 Amps
- Tmin: 39.9 ms
- CFC 1000

Test Date: 3/10/09
Speed: 0.0 mph (0.0 km/h)
# APPENDIX C

## CRASH TEST PHOTOGRAPHS

## TABLE OF PHOTOGRAPHS

<table>
<thead>
<tr>
<th>Photo No.</th>
<th>Description</th>
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<td>1818 LB</td>
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THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR VEHICLE SAFETY, BUMPER, AND THEFT PREVENTION STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.

1G1AK58H8971277727 TYPE: PASS CAR
The combined weight of occupants and cargo should never exceed 404 kg or 891 lbs.

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<td>230 kPa, 33 PSI</td>
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<tr>
<td>REAR</td>
<td>P195/60R15</td>
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<tr>
<td>SPARE</td>
<td>T115/70D15</td>
<td>420 kPa, 60 PSI</td>
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See owner's manual for additional information.
Pre-Test Front View of Test Vehicle
Post-Test Front View of Test Vehicle
Pre-Test Left Side View of Test Vehicle
Post-Test Left Side View of Test Vehicle
Pre-Test Right Side View of Test Vehicle
Post-Test Right Side View of Test Vehicle
Pre-Test Left Front Three-Quarter View of Test Vehicle
Post-Test Left Front Three-Quarter View of Test Vehicle
Pre-Test Right Front Three-Quarter View of Test Vehicle
Post-Test Right Front Three-Quarter View of Test Vehicle
Pre-Test Right Rear Three-Quarter View of Test Vehicle
Pre-Test Left Rear Three-Quarter View of Test Vehicle
Post-Test Windshield View
Pre-Test Fuel Filler Cap View
Post-Test Fuel Filler Cap View
Pre-Test Mid Underbody View
Post-Test Mid Front Underbody View
Post-Test Mid Underbody View
Post-Test Rear Underbody View
Pre-Test Driver Dummy Front View (head position)
Post-Test Driver Dummy Front View (head position)
Pre-Test Driver Dummy Position Left Side View (door open)
Pre-Test Driver Dummy Seat Position
Post-Test Driver Dummy Seat Position
Pre-Test Driver Dummy Feet Position
Post-Test Driver Dummy Feet Position
Pre-Test Driver Side Knee Bolster View
Post-Test Driver Side Knee Bolster View
Post-Test Driver Dummy Head Contact (headrest)
Post-Test Driver Dummy Knee Contact
Pre-Test Passenger Dummy Front View (head position)
Post-Test Passenger Dummy Front View (head position)
Post-Test Passenger Dummy Position Right Side View
Pre-Test Passenger Dummy Position Right Side View (door open)
Post-Test Passenger Dummy Position Right Side View (door open)
Pre-Test Passenger Dummy Seat Position
Post-Test Passenger Dummy Seat Position
Pre-Test Passenger Dummy Feet Position
Pre-Test Passenger Side Knee Bolster View
Post-Test Passenger Side Knee Bolster View
Post-Test Passenger Dummy Airbag Contact
Post-Test Passenger Dummy Knee Contact
Rollover 90 Degrees
Rollover 270 Degrees
Temperature Plot
### APPENDIX D

#### LOW RISK PHOTOGRAPHS

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Post-Test 5th Fem. P1 Driver Dummy Head Contact (headrest)
Pre-Test 5th Fem. P2 Driver Dummy Right Side View
Post-Test 5th Fem. P2 Driver Dummy Airbag Right Side View
Pre-Test 3YO P1 Passenger Dummy Left Side View
Post-Test 3YO P1 Passenger Dummy Left Side View
D-24.

Post-Test 3YO P2 Passenger Dummy Airbag Left Side View
Post-Test 3YO P2 Passenger Dummy Airbag Right Side View
Pre-Test 6YO P1 Passenger Dummy Right Side View
D-30.

Post-Test 6YO P1 Passenger Dummy Airbag Left Side View
Post-Test 6YO P1 Passenger Dummy Airbag Right Side View
Pre-Test 6YO P2 Passenger Dummy Left Side View
Post-Test 6YO P2 Passenger Dummy Left Side View
Post-Test 6YO P2 Passenger Dummy Right Side View
Post-Test 6YO P2 Passenger Dummy Airbag Left Side View
### APPENDIX E

**SUPPRESSION PHOTOGRAPHS**

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Photo No. 33. Graco Infant W/ Base Forward Facing Unbelted, Rearward Seat Track
Photo No. 34. Graco Infant W/O Base Belted, Forward Seat Track
Photo No. 35. Graco Infant W/O Base Belted, Middle Seat Track
Photo No. 36. Graco Infant W/O Base Belted, Rearward Seat Track
Photo No. 37. Graco Infant W/O Base Unbelted, Forward Seat Track
Photo No. 38. Graco Infant W/O Base Unbelted, Middle Seat Track
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Photo No. 44. Britax Roundabout 161 Forward Facing Belted, Forward Seat Track
Photo No. 45. Britax Roundabout 161 Forward Facing Belted, Middle Seat Track
Photo No. 46. Britax Roundabout 161 Forward Facing Belted, Rearward Seat Track
Photo No. 47. Britax Roundabout 161 Forward Facing Unbelted, Forward Seat Track
Photo No. 48. Britax Roundabout 161 Forward Facing Unbelted, Middle Seat Track
Photo No. 49. Britax Roundabout 161 Forward Facing Unbelted, Rearward Seat Track
Photo No. 50. Britax Roundabout 161 Rear Facing Belted, Forward Seat Track
Photo No. 51. Britax Roundabout 161 Rear Facing Belted, Middle Seat Track
Photo No. 52. Britax Roundabout 161 Rear Facing Belted, Rearward Seat Track
Photo No. 53. Britax Roundabout 161 Rear Facing Unbelted, Forward Seat Track
Photo No. 54. Britax Roundabout 161 Rear Facing Unbelted, Middle Seat Track
Photo No. 55. Britax Roundabout 161 Rear Facing Unbelted, Rearward Seat Track
Photo No. 56. Unbelted 5th Percentile Female Reactivation, Forward Seat Track
Photo No. 57. Century Encore Forward Facing Belted, Forward Seat Track
Photo No. 58. Century Encore Forward Facing Belted, Middle Seat Track
Photo No. 59. Century Encore Forward Facing Belted, Rearward Seat Track
Photo No. 60. Century Encore Forward Facing Unbelted, Forward Seat Track
Photo No. 61. Century Encore Forward Facing Unbelted, Middle Seat Track
Photo No. 62. Century Encore Forward Facing Unbelted, Rearward Seat Track
Photo No. 63. Century Encore Rear Facing Belted, Forward Seat Track
Photo No. 64. Century Encore Rear Facing Belted, Middle Seat Track
Photo No. 65. Century Encore Rear Facing Belted, Rearward Seat Track
Photo No. 66. Century Encore Rear Facing Unbelted, Forward Seat Track
Photo No. 67. Century Encore Rear Facing Unbelted, Middle Seat Track
Photo No. 68. Century Encore Rear Facing Unbelted, Rearward Seat Track
Photo No. 69. Unbelted 5th Percentile Female Reactivation, Middle Seat Track
Photo No. 70. Evenflo Medallion 254 Forward Facing Belted, Forward Seat Track
Photo No. 71. Evenflo Medallion 254 Forward Facing Belted, Middle Seat Track
Photo No. 72. Evenflo Medallion 254 Forward Facing Belted, Rearward Seat Track
Photo No. 73. Evenflo Medallion 254 Forward Facing Unbelted, Forward Seat Track
Photo No. 74. Evenflo Medallion 254 Forward Facing Unbelted, Middle Seat Track
Photo No. 75. Evenflo Medallion 254 Forward Facing Unbelted, Rearward Seat Track
Photo No. 76. Evenflo Medallion 254 Rear Facing Belted, Forward Seat Track
Photo No. 77. Evenflo Medallion 254 Rear Facing Belted, Middle Seat Track
Photo No. 78. Evenflo Medallion 254 Rear Facing Belted, Rearward Seat Track
Photo No. 79. Evenflo Medallion 254 Rear Facing Unbelted, Forward Seat Track
Photo No. 80. Evenflo Medallion 254 Rear Facing Unbelted, Middle Seat Track
Photo No. 81. Evenflo Medallion 254 Rear Facing Unbelted, Rearward Seat Track
Photo No. 82. Unbelted 5th Percentile Female Reactivation, Rearward Seat Track
DOT/NHTSA 208 Suppression Test - 2009 Chevrolet Cobalt (C90106)

Section B

Rear Facing CRS

Britax Handle With Care 191 Belted, Forward Seat Track

Britax Handle With Care 191 Belted, Middle Seat Track

Britax Handle With Care 191 Belted, Rearward Seat Track

Britax Handle With Care 191 Unbelted, Forward Seat Track
Britax Handle With Care 191 Forward Facing Unbelted, Rearward Seat Track

Unbelted 5th Percentile Female Reactivation, Forward Seat Track
Evenflo First Choice 204 Unbelted, Middle Seat Track

Evenflo First Choice 204 Unbelted, Rearward Seat Track

Evenflo First Choice 204 Forward Facing Unbelted, Forward Seat Track

Evenflo First Choice 204 Forward Facing Unbelted, Middle Seat Track
Graco Infant W Base Unbelted, Middle Seat Track

Graco Infant W Base Unbelted, Rearward Seat Track

Graco Infant W Base Forward Facing Unbelted, Forward Seat Track

Graco Infant W Base Forward Facing Unbelted, Middle Seat Track
DOT/NHTSA 208 Suppression Test - 2009 Chevrolet Cobalt (C90106)

12 Month

Section B

Rear Facing CRS
Unbelted 5th Percentile Female Reactivation, Forward Seat Track
Century Encore Forward Facing Unbelted, Middle Seat Track
Century Encore Forward Facing Unbelted, Rearward Seat Track
Century Encore Rear Facing Belted, Forward Seat Track
Century Encore Rear Facing Belted, Middle Seat Track
Century Encore Rear Facing Belted, Rearward Seat Track
Century Encore Rear Facing Unbelted, Forward Seat Track
Century Encore Rear Facing Unbelted, Middle Seat Track
Century Encore Rear Facing Unbelted, Rearward Seat Track
Unbelted 5th Percentile Female Reactivation, Middle Seat Track
Evenflo Medallion 254 Forward Facing Belted, Forward Seat Track

Evenflo Medallion 254 Forward Facing Belted, Middle Seat Track

Evenflo Medallion 254 Forward Facing Belted, Rearward Seat Track

Evenflo Medallion 254 Forward Facing Unbelted, Forward Seat Track
DOT/NHTSA 208 Suppression Test - 2009 Chevrolet Cobalt (C90106)

12 Month Section C

Forward Facing Convertible CRS

Evenflo Medallion 254 Forward Facing Unbelted, Middle Seat Track

Evenflo Medallion 254 Forward Facing Unbelted, Rearward Seat Track

Evenflo Medallion 254 Rear Facing Belted, Forward Seat Track

Evenflo Medallion 254 Rear Facing Belted, Middle Seat Track
DOT/NHTSA 208 Suppression Test - 2009 Chevrolet Cobalt (C90106)
12 Month Section C Forward Facing Convertible CRS

Evenflo Medallion 254 Rear Facing Belted, Rearward Seat Track

Evenflo Medallion 254 Rear Facing Unbelted, Forward Seat Track

Evenflo Medallion 254 Rear Facing Unbelted, Middle Seat Track

Evenflo Medallion 254 Rear Facing Unbelted, Rearward Seat Track
Unbelted 5th Percentile Female Reactivation, Rearward Seat Track

Forward Facing Convertible CRS
# APPENDIX F

## INSTRUMENTATION CALIBRATION

### INSTRUMENTS FOR DRIVER DUMMY NO.: 511

<table>
<thead>
<tr>
<th>SERIAL NO.</th>
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### INSTRUMENTS FOR PASSENGER DUMMY NO.: 516

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