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Prepared by: Eric Peschman, Project Engineer  Date: December 1, 2009

Reviewed by: Michael Janovicz, Program Manager  Date: December 1, 2009

FINAL REPORT ACCEPTED BY:

[Signature]
Date of Acceptance  December 01, 2009
Compliance tests were conducted on the subject 2009 Blue Bird Micro Bird School Bus, NHTSA No. C90902, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-222-03 for the determination of FMVSS 222 compliance. Data sheet 7 is omitted from this report as the barrier deflection requirements are not applicable to school buses with a GVWR ≤ 10,000 lbs.

Test Failure: See Section 2, Test Data Summary. See Section 9, Laboratory Notice of Test Failure.

Copies of this report are available from:
NHTSA Technical Information Services (TIS)
Mail Code: NPO-411
1200 New Jersey Avenue, S.E.
Washington, D.C. 20590
Fax No.: (202) 493-2833
E-mail: tis@dot.gov

Price: Form DOT F1700.7 (8-72)
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</tbody>
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SECTION 1
PURPOSE OF COMPLIANCE TEST

Tests were conducted on a 2009 Blue Bird Micro Bird School Bus, NHTSA No.: C90902, in accordance with the specifications of the Office of Vehicle Safety Compliance (OVSC) Test Procedures TP-222-03 to determine compliance to the requirements of Federal Motor Vehicle Safety Standards (FMVSS) 222, “School Bus Passenger Seating and Crash Protection”.

This program is sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No.: DTNH22-08-D-00075.
SECTION 2
TEST DATA SUMMARY

The passenger seating and crash protection tests were conducted during January through May 2009. All tests were conducted by MGA Research Corporation at the Wisconsin Operations. The test vehicle, 2009 Blue Bird Micro Bird School Bus, NHTSA No.: C90902, did not appear to meet all the requirements of FMVSS 222. The test failures are listed below.

Failure 1
FMVSS Requirement Paragraph S5.3.2.2: Leg Protection zone, “When any point on the rear surface of that part of a seat back or restraining barrier within any zone specified in S5.3.2.1 is impacted from any direction at 4.9 m/s by the knee form specified in S6.7, the resisting force of the impacted material shall not exceed 2,669 N and the contact area on the knee form surface shall not be less than 1,935 mm².”

During the dynamic knee impact test on Barrier No. B1, the resistive force exceeded the limit of 2669 N for impact locations B1 K5 and B1 K6.
LINEAR AND AREA MEASUREMENTS
Seat to seat/barrier spacing was checked on all seats and found to be 531 mm or less as shown on Data Sheet No. 1.

The seat back height and front surface area of Seat Nos. S1 and S8 were measured in accordance with Section 12.1 of OVSC TP-222-03. As shown in Data Sheet No. 2 for S1 and S8, the seat back area is greater than ninety percent of the seat bench width multiplied by 508.

The restraining barrier position and projected rear surface area of Barrier Nos. B1 and B8 were measured in accordance with OVSC TP-222-03. As shown in Data Sheet No. 6 for B1 and B8, the surface area of each barrier is equal to or greater than the surface area of the seat back located to the rear of it.

SEAT CUSHION RETENTION
Seat Nos. S1 and S8 were tested in accordance with Section 12.3 of OVSC TP-222-03. Seat cushion weight was 3.2 kg for both cushions S1 and S8. The maximum force reached for S1 was 175 N and 177 N for S8. For S1, the lower time limit boundary (t1) was approximately 3 seconds with approximate load duration of 16 seconds. For S8, the lower time limit boundary (t1) was approximately 4 seconds with approximate load duration of 12 seconds. As shown in Data Sheet No. 3, the seat cushions tested complied with all requirements.

SEAT BACK FORCE/DEFLECTION TEST - FORWARD
Seat No. S2 was tested in accordance with Section 12.4 of OVSC TP-222-03. Seat bench width was determined to be 866 mm. “W” was calculated to be 2.272 and rounded to the nearest whole number (2). The seating reference point (SRP) was 474 mm above the bus floor. The deflection of the seat back at conclusion of lower loading bar loading at 1557 W N load was 58.7 mm on S2. The allowable maximum deflection without moving the seat back to within 102 mm of another seat or restraining barrier was 356 mm. The stroke rate of the upper loading bar was determined by the test engineer to be 14.4 mm/sec. The location of the upper loading bar was 406 mm above the SRP. The tests were concluded when the maximum deflection of 356 mm was reached in which the seat back absorbed 1661 joules. The minimum required area under the force versus deflection curve of the upper loading bar was 452 W or 904 joules. As shown on Data Sheet No. 4, S2 did meet the force deflection forward requirements.
SECTION 2 (CONTINUED)
TEST DATA SUMMARY

SEAT BACK FORCE/DEFLECTION TEST - FORWARD
Seat No. S7 was tested in accordance with Section 12.4 of OVSC TP-222-03. Seat bench width was determined to be 866 mm. “W” was calculated to be 2.272 and rounded to the nearest whole number (2). The seating reference point (SRP) was 474 mm above the bus floor. The deflection of the seat back at conclusion of lower loading bar loading at 1557 W N load was 60 mm on S7. The allowable maximum deflection without moving the seat back to within 102 mm of another seat or restraining barrier was 356 mm. The stroke rate of the upper loading bar was determined by the test engineer to be 14.4 mm/sec. The location of the upper loading bar was 406 mm above the SRP. The tests were concluded when the maximum deflection of 356 mm was reached in which the seat back absorbed 1568 joules. The minimum required area under the force versus deflection curve of the upper loading bar was 452 W or 904 joules. As shown on Data Sheet No. 4, S7 did meet the force deflection forward requirements.

SEAT BACK FORCE/DEFLECTION TEST - REARWARD
Seat No. S3 was tested in accordance with Section 12.4 of OVSC TP-222-03. Seat bench width was determined to be 866 mm for S3. “W” was calculated to be 2.272 and rounded to the nearest whole number (2). The seating reference point (SRP) was 474 mm above the bus floor. The allowable maximum deflection without moving the seat back to within 102 mm of another seat or restraining barrier was 254 mm. The stroke rate of the upper loading bar was determined by the test engineer to be 8.76 mm/sec for S3. The location of the loading bar was 343 mm above the SRP. The test was stopped when the maximum deflection of the seat back of 254 mm was achieved. The minimum required area under the force versus deflection curve of the loading bar was 316 W or 632 joules. As shown in Data Sheet No. 5, S3 did meet the force deflection rearward requirements.

KNEE FORM IMPACT ZONE TESTS
Seat Nos. S1 and S8, and Barrier No. B1 were tested in accordance with Section 12.7 of OVSC TP-222-03. The mass of the knee form was 4.52 kg. All knee form contact area criteria and maximum resistive force criteria were not met for the seats and barrier. For S1, the impact locations K1 and K4 were not considered for the resistive force requirement due to the speeds for those impacts being above the specified requirements. For B1, the impact locations K5 and K6 exceeded the maximum resistive force. Data from these tests are presented in Data Sheet No. 10.
HEAD FORM IMPACT ZONE TESTS

Seat Nos. S1 and S8, and Barrier No. B1 were tested in accordance with Section 12.6 of OVSC TP-222-03. The mass of the head form was 5.20 kg. All head form contact area, impact energy, and head injury criteria was met for the seats. The barrier also met the head form contact area, impact energy, and head injury criteria; however, only a single impact energy test was performed. Data from these tests are presented in Data Sheet Nos. 8 and 9.

Testing of the barrier was discontinued at the request of the COTR due to its failure to meet the knee impact requirements in previous tests. The testing was stopped in an effort to preserve the barrier for post-test inspection.

SEAT BELT ANCHORAGES

Seat belt anchorages for Seat No. S4 were tested in accordance with Appendix A of OVSC TP-222-03. S4 is located as shown in Section 8, Bus Floor Plan.

Seat belt anchorages and specially made high strength webbing straps were used to conduct the test. The seat belt anchor points met the required load of 22,000 N for each. Data from this test are presented in Data Sheet No. 11.
# ADMINISTRATIVE DATA SHEET

**Test Vehicle:** 2009 BLUE BIRD MICRO BIRD SCHOOL BUS  
**NHTSA No.:** C90902  
**Test Lab:** MGA RESEARCH CORPORATION  
**Test Dates:** 01/27/09 – 05/13/09

## INCOMPLETE VEHICLE (IF APPLICABLE)

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Ford Motor Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model:</td>
<td>E-350</td>
</tr>
<tr>
<td>VIN:</td>
<td>1FDDE35L19DA17396</td>
</tr>
<tr>
<td>Build Date:</td>
<td>10/08</td>
</tr>
<tr>
<td>Certification Date:</td>
<td>10/08</td>
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</table>

## COMPLETED VEHICLE (SCHOOL BUS)

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Blue Bird Body Company</th>
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</thead>
<tbody>
<tr>
<td>Make/Model:</td>
<td>Micro Bird</td>
</tr>
<tr>
<td>VIN:</td>
<td>1FDDE35L19DA17396</td>
</tr>
<tr>
<td>NHTSA No.:</td>
<td>C90902</td>
</tr>
<tr>
<td>Color:</td>
<td>Yellow</td>
</tr>
<tr>
<td>GVWR:</td>
<td>4,356 kg / 9,600 lbs</td>
</tr>
<tr>
<td>Build Date:</td>
<td>12/08</td>
</tr>
<tr>
<td>Certification Date:</td>
<td>12/08</td>
</tr>
</tbody>
</table>

## DATES

<table>
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<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle Receipt:</td>
<td>12/29/2008</td>
</tr>
<tr>
<td>Start of Compliance Test:</td>
<td>01/27/2009</td>
</tr>
<tr>
<td>Completion of Compliance Test</td>
<td>05/13/2009</td>
</tr>
</tbody>
</table>

## COMPLIANCE TEST:
All tests were performed in accordance with the references outlined in TP-222-03.

Recorded By:  
Approved By:  
Date: 11/19/2009
# GENERAL TEST DATA SHEET

**Test Vehicle:** 2009 BLUE BIRD MICRO BIRD SCHOOL BUS  
**NHTSA No.:** C90902  
**Test Lab:** MGA RESEARCH CORPORATION  
**Test Dates:** 01/27/09 – 05/13/09

## SCHOOL BUS IDENTIFICATION

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model Year/Mfr./Make/Model:</td>
<td>2009/ Blue Bird Micro Bird</td>
</tr>
<tr>
<td>Passenger Capacity:</td>
<td>(1 Driver, 16 Passengers)</td>
</tr>
<tr>
<td>NHTSA No.:</td>
<td>C90902</td>
</tr>
<tr>
<td>VIN:</td>
<td>1FDDE35L19DA17396</td>
</tr>
<tr>
<td>Conventional or Forward Control:</td>
<td>Conventional Control</td>
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<tr>
<td>GAWR (Certification Label) FRONT:</td>
<td>1,838 kg / 4,050 lbs</td>
</tr>
<tr>
<td>GAWR (Certification Label) REAR:</td>
<td>2,760 kg / 6,084 lbs</td>
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<td>GVWR (Certification Label) TOTAL:</td>
<td>4,356 kg / 9,600 lbs</td>
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</table>

## TEST CONDITIONS

<table>
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<th>Field</th>
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<td>Date(s) of Test:</td>
<td>01/27/2009 – 05/13/2009</td>
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<tr>
<td>Ambient Temperature (°C):</td>
<td>21</td>
</tr>
<tr>
<td>Required Temperature Range:</td>
<td>0°C to 32°C</td>
</tr>
</tbody>
</table>

## SEAT IDENTIFICATION

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seat Manufacturer:</td>
<td>Bluebird Body Company</td>
</tr>
<tr>
<td>Model Name &amp; Number:</td>
<td></td>
</tr>
<tr>
<td>Description of Seats:</td>
<td>Seat frames are constructed of 1 inch square welded steel tubing. The seat back has a 22 gauge (0.027 inches) steel pan welded to the tubing and is covered with 30 mm of soft foam. The outer main uprights of the seat back frame are covered by 45 mm Styrofoam. The seat cushion is constructed of 12 mm plywood and 125 mm foam pad. The seat back and cushion are wrapped with 0.5 mm of vinyl.</td>
</tr>
</tbody>
</table>
SECTION 3
COMPLIANCE TEST DATA

The following data sheets document the results of testing on the 2009 Blue Bird Micro Bird School Bus, NHTSA No. C90902.
### DATA SHEET 1

#### SEAT TO SEAT/BARRIER SPACING

**Test Vehicle:** 2009 BLUE BIRD MICRO BIRD SCHOOL BUS  
**NHTSA No.:** C90902  
**Test Lab:** MGA RESEARCH CORPORATION  
**Test Dates:** 01/27/09 – 05/13/09

<table>
<thead>
<tr>
<th>SEAT NUMBER</th>
<th>MEASUREMENT OF SPACING FROM SRP FORWARD TO SEAT/BARRIER (mm)</th>
<th>REQMT ≤ 610 MM (≤ 24&quot;) CLASS 1 BUSES ONLY</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>531</td>
<td>PASS</td>
</tr>
<tr>
<td>S2</td>
<td>531</td>
<td>PASS</td>
</tr>
<tr>
<td>S3</td>
<td>475</td>
<td>PASS</td>
</tr>
<tr>
<td>S4</td>
<td>492</td>
<td>PASS</td>
</tr>
<tr>
<td>S5</td>
<td>472</td>
<td>PASS</td>
</tr>
<tr>
<td>S6</td>
<td>475</td>
<td>PASS</td>
</tr>
<tr>
<td>S7</td>
<td>425</td>
<td>PASS</td>
</tr>
<tr>
<td>S8</td>
<td>500</td>
<td>PASS</td>
</tr>
</tbody>
</table>

**COMMENTS:** None

**Recorded By:** [Signature]  
**Approved By:** [Signature]  
**Date:** 01/28/2009
## DATA SHEET 2
### SEAT BACK HEIGHT & FRONT SURFACE AREA TEST

**Test Vehicle:** 2009 BLUE BIRD MICRO BIRD SCHOOL BUS  
**NHTSA No.:** C90902  
**Test Lab:** MGA RESEARCH CORPORATION  
**Test Dates:** 01/27/09 – 05/13/09

**SEAT NUMBER: S1**

<table>
<thead>
<tr>
<th></th>
<th>Is the seat back height at least 508 mm vertically above the SRP? (S5.1.2) Yes – Pass; No – Fail</th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td>PASS</td>
</tr>
</tbody>
</table>

2. Measure the seat back front projected area in a vertical plane bound by horizontal planes through the SRP and 508 mm above the SRP according to the following procedure:
   - Width, a = 757 mm; width, b = 858 mm; radius = 7,200 mm
   - Area = ½ (a+b) x 508 mm = 410,210 mm² – * 7,200 mm² = 403,010 mm²

3. Measure the seat cushion width - W1 = 872 mm
   - If the seat cushion is not rectangular, measure the cushion at the forward most edge and the rearward most edge, average the widths, and use the average width as W1.

4. Calculate the following: 0.9 x W1 x 508 mm = 398,678 mm²

<table>
<thead>
<tr>
<th></th>
<th>Is item 2 greater than item 4? (S5.1.2) Yes – Pass; No – Fail</th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.</td>
<td></td>
<td>PASS</td>
</tr>
</tbody>
</table>

**NOTE:** For a seat back or a seat cushion that has a nonsymmetrical shape or has a large radius at the corner, the above described measuring method must be modified as required to obtain accurate area measurements.

**COMMENTS:** * Denotes area outside of radius.

**Recorded By:** [Signature]  
**Approved By:** [Signature]  
**Date:** 01/28/2009
## SEAT BACK HEIGHT & FRONT SURFACE AREA TEST

**Test Vehicle:** 2009 BLUE BIRD MICRO BIRD SCHOOL BUS       **NHTSA No.:** C90902  
**Test Lab:** MGA RESEARCH CORPORATION       **Test Dates:** 01/27/09 – 05/13/09

**SEAT NUMBER: S8**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Is the seat back height at least 508 mm vertically above the SRP? (S5.1.2) Yes – Pass; No – Fail</td>
<td><strong>PASS</strong></td>
</tr>
</tbody>
</table>

2. Measure the seat back front projected area in a vertical plane bound by horizontal planes through the SRP and 508 mm above the SRP according to the following procedure:
   - Width, \( a = 757 \) mm;  width, \( b = 858 \) mm;  radius = 7,200 mm
   - Area = \( \frac{1}{2} (a+b) \times 508 \) mm = 410,210 mm\(^2\) – * 7,200 mm\(^2\) = 403,010 mm\(^2\)

3. Measure the seat cushion width - \( W_1 = 872 \) mm
   - If the seat cushion is not rectangular, measure the cushion at the forward most edge and the rearward most edge, average the widths, and use the average width as \( W_1 \).

4. Calculate the following: \( 0.9 \times W_1 \times 508 \) mm = 398,678 mm\(^2\)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.</td>
<td>Is item 2 greater than item 4? (S5.1.2) Yes – Pass; No – Fail</td>
<td><strong>PASS</strong></td>
</tr>
</tbody>
</table>

**NOTE:** For a seat back or a seat cushion that has a nonsymmetrical shape or has a large radius at the corner, the above described measuring method must be modified as required to obtain accurate area measurements.

**COMMENTS:** * Denotes area outside of radius.

**Recorded By:** Brian Rea  
**Approved By:** Khaled Jawad  
**Date:** 01/28/2009
DATA SHEET 3
SEAT CUSHION RETENTION TEST

Test Vehicle: 2009 BLUE BIRD MICRO BIRD SCHOOL BUS
NHTSA No.: C90902
Test Lab: MGA RESEARCH CORPORATION
Test Dates: 01/27/09 – 05/13/09

SEAT NUMBER: S1

1. Cushion Weight/Mass = 3.2 kg
2. Cushion Weight x 5 = F = 157 N (S5.1.5)
3. Complete the following force/time graph:

F must be 5 x Cushion Weight; t1 and t2 must be according to the following expressions:
T1 => 1 sec., <5 sec., t2 = t1 + 5 sec., + 0 sec. and -0.10 sec.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Did seat cushion separate from the seat structure at any attachment point? (S5.1.5) Yes – Fail; No – Pass</td>
<td>PASS</td>
</tr>
</tbody>
</table>

DESCRIBE SEAT CUSHION ATTACHMENTS: Two metal clips in the front and two locking levers in the rear.

COMMENTS: None

Recorded By: [Signature]
Approved By: [Signature] Date: 04/08/2009
SEAT NUMBER: S8

1. Cushion Weight/Mass = 3.2 kg
2. Cushion Weight x 5 = F = 157 N (S5.1.5)
3. Complete the following force/time graph:

F must be 5 x Cushion Weight; t1 and t2 must be according to the following expressions:
T1=>1 sec., <5 sec., t2 = t1 + 5 sec., + 0 sec. and -0.10 sec.

4. Did seat cushion separate from the seat structure at any attachment point? (S5.1.5) Yes – Fail; No – Pass
   PASS

DESCRIBE SEAT CUSHION ATTACHMENTS: Two metal clips in the front and two locking levers in the rear.

COMMENTS: None

Recorded By: [Signature]
Approved By: [Signature] Date: 04/08/2009
DATA SHEET 4
SEAT BACK FORCE DEFLECTION TEST - FORWARD

Test Vehicle: 2009 BLUE BIRD MICRO BIRD SCHOOL BUS  
NHTSA No.: C90902
Test Lab: MGA RESEARCH CORPORATION  
Test Dates: 01/27/09 – 05/13/09

SEAT NUMBER: S7

1. Seat Bench Width = 866 mm
   \[ W = \frac{\text{Seat Bench Width}}{381} \text{ mm} \] (round to nearest whole number) = (2)
   Seat Reference Point (SRP) location is: (Description of location as supplied by the COTR): 474 mm Above Floor, 240 mm from the leg bolt hole.

2. Location of lower loading bar is 0 mm above the SRP.
   (Requirement: Between 102 mm above and 102 mm below the SRP) (S5.1.3.1)
   Length of lower loading bar = 749 mm
   Seat Back width at SRP = 850 mm

3. Include x-y plot of Force vs. Time for the lower loading bar.

4. Deflection of the seat back at conclusion of lower bar loading (1557 W Newtons position) = 60 mm.

5. Maximum deflection allowed without moving the seat back to within 102 mm of another seat or restraining barrier = 356 mm (must be 356 mm of less) (S5.1.3)

6. Seat back movement rate selected by the test engineer = 14.4 mm/sec

7. Location of upper loading bar is in a horizontal plane 406 mm above the SRP.
   (Requirement: 406 mm) (S5.1.3.3). Length of upper loading bar = 635 mm. Width of seat back at 406 mm above SRP = 734 mm.

8. Reason for stopping seat back deflection:
   ___ Reached deflection determined in Item 6 above (if less than 356 mm)
   _X_ Reached 356 mm maximum allowed deflection (Actual deflection was 358 mm)
   ___ Separation was about to occur

9. Include the x-y plot of force vs. deflection for the upper loading bar with boundaries of Figure 14 (OVSC TP-222-3) superimposed.
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>10.</strong></td>
<td>Is the seat in its final deflected position within 102 mm of the next seat or barrier? Yes – Fail; No – Pass</td>
</tr>
<tr>
<td><strong>11.</strong></td>
<td>Does the forward force vs. deflection trace of the seat back lie within the corridor? (S5.1.3) Yes – Pass; No – Fail</td>
</tr>
<tr>
<td>12.</td>
<td>Include a deflection vs. time plot for the upper loading bar.</td>
</tr>
<tr>
<td>13.</td>
<td>The area within the force vs. deflection curve = 1,568 joules</td>
</tr>
<tr>
<td>14.</td>
<td>452W = 904 joules (S5.1.3.4)</td>
</tr>
<tr>
<td><strong>15.</strong></td>
<td>Is item 13 greater than or equal to item 14? (S5.1.3.4) Yes – Pass; No – Fail</td>
</tr>
</tbody>
</table>

**COMMENTS:** Forward deflection curve exited boundaries on low end.

Recorded By: [Signature]

Approved By: [Signature]  
Date: 05/11/2009
DATA SHEET 4
SEAT BACK FORCE DEFLECTION TEST – FORWARD

Test Vehicle: 2009 BLUE BIRD MICRO BIRD SCHOOL BUS  NHTSA No.: C90902
Test Lab: MGA RESEARCH CORPORATION  Test Dates: 01/27/09 – 05/13/09

SEAT NUMBER: S2

1. Seat Bench Width = 866 mm
   \[ W = \frac{\text{Seat Bench Width}}{381} \text{ mm} \] (round to nearest whole number) = (2)
   Seat Reference Point (SRP) location is: (Description of location as supplied by the COTR): 474 mm Above Floor, 240 mm.

2. Location of lower loading bar is 0 mm above the SRP.
   (Requirement: Between 102 mm above and 102 mm below the SRP) (S5.1.3.1)
   Length of lower loading bar = 749 mm
   Seat Back width at SRP = 850 mm

3. Include x-y plot of Force vs. Time for the lower loading bar.

4. Deflection of the seat back at conclusion of lower bar loading (1557 W Newtons position) = 58.7 mm.

5. Maximum deflection allowed without moving the seat back to within 102 mm of another seat or restraining barrier = 356 mm (must be 356 mm or less) (S5.1.3)

6. Seat back movement rate selected by the test engineer = 14.4 mm/sec

7. Location of upper loading bar is in a horizontal plane 406 mm above the SRP.
   (Requirement: 406 mm) (S5.1.3.3). Length of upper loading bar = 635 mm. Width of seat back at 406 mm above SRP = 734 mm.

8. Reason for stopping seat back deflection:
   ___ Reached deflection determined in Item 6 above (if less than 356 mm)
   _X_ Reached 356 mm maximum allowed deflection (Actual deflection was 356 mm)
   ___ Separation was about to occur

9. Include the x-y plot of force vs. deflection for the upper loading bar with boundaries of Figure 14 (OVSC TP-222-3) superimposed.
# DATA SHEET 4 (CONTINUED)

## SEAT BACK FORCE DEFLECTION TEST – FORWARD

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.</td>
<td>Is the seat in its final deflected position within 102 mm of the next seat or barrier? Yes – Fail; No – Pass</td>
<td>PASS</td>
</tr>
<tr>
<td>11.</td>
<td>Does the forward force vs. deflection trace of the seat back lie within the corridor? (S5.1.3) Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
</tbody>
</table>

12. Include a deflection vs. time plot for the upper loading bar.
13. The area within the force vs. deflection curve = 1,661 joules
14. $452W = 904$ joules (S5.1.3.4)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.</td>
<td>Is item 13 greater than or equal to item 14? (S5.1.3.4) Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
</tbody>
</table>

**COMMENTS:** None

**Recorded By:** [Signature]

**Approved By:** [Signature] Date: 2/5/2009
DATA SHEET 5
SEAT BACK FORCE DEFLECTION TEST – REARWARD

Test Vehicle: 2009 BLUE BIRD MICRO BIRD SCHOOL BUS  NHTSA No.: C90902
Test Lab: MGA RESEARCH CORPORATION  Test Dates: 01/27/09 – 05/13/09

SEAT NUMBER: S3

1. Seat Bench Width = 866 mm
   \[ W = \frac{\text{Seat Bench Width}}{381} \text{ mm} \] (round to nearest whole number) = (2)

2. Location of the loading bar is in a horizontal plane 343 mm above the SRP of the test seat. (Requirement: 343 mm above the SRP) (S5.1.4.1)
   - Length of loading bar = 674 mm
   - Width of seat back at 343 mm above SRP = 780 mm

3. Deflection of seat back at 222 N preload = 28.2 mm

4. Maximum deflection allowed without moving the seat back to within 102 mm of another seat = 254 mm (maximum allowed = 254 mm) (S5.1.4)

5. Seat back movement rate selected by the test engineer = 8.76 mm / sec

6. Reason for stopping deflection:
   - __ Reached deflection determined in Item 4 above (if less than 254 mm)
   - \( x \) Reached 254 mm maximum allowed deflection (Actual deflection was 255 mm)
   - ___ Separation was about to occur

7. Include the x-y plot of force vs. deflection for the loading bar with boundaries of Figure 18 (OVSC TP-222-3) superimposed.

<table>
<thead>
<tr>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.</td>
<td>Does the force vs. deflection plot lie within the boundaries of Figure 18? (OVSC TP-222-03) Yes – Pass; No – Fail</td>
</tr>
</tbody>
</table>

9. Include a deflection vs. time plot for the upper loading bar.

10. 316W = 632 joules

11. The area within the force vs. deflection curve = 1,190 joules

<table>
<thead>
<tr>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.</td>
<td>Is item 11 greater than or equal to item 10? (S5.1.4.2) Yes – Pass; No – Fail</td>
</tr>
</tbody>
</table>

COMMENTS: None

Recorded By: 

Approved By: Michael Jany  Date: 05/12/2009
# DATA SHEET 6  
RESTRAINING BARRIER POSITION AND PROJECTED REAR SURFACE AREA

**Test Vehicle:** 2009 BLUE BIRD MICRO BIRD SCHOOL BUS  
**NHTSA No.:** C90902  
**Test Lab:** MGA RESEARCH CORPORATION  
**Test Dates:** 01/27/09 – 05/13/09

**SEAT NUMBER: S1**

1. Measure distance T from SRP of seat immediately aft of barrier in a horizontal longitudinal line forward to barrier. T= 531 mm.

<table>
<thead>
<tr>
<th><strong>Is distance T equal to or less than 610 mm?</strong></th>
<th><strong>PASS/FAIL</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>(S5.2) Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
</tbody>
</table>

2. Measure distance D at top (t) and bottom (b) of barrier.
   - D_t = 100 mm  
   - D_b = 0 mm

3. Measure distance C at top (t) and bottom (b) of seat back.
   - C_t = 100 mm  
   - C_b = 0 mm

4. Is D_t equal to or less than C_t? Yes – Pass; No – Fail  
   - PASS

5. Is D_b equal to or less than C_b? Yes – Pass; No – Fail  
   - PASS

6. Measure distance E at top of barrier and bottom of barrier.
   - E_t = 695 mm  
   - E_b = 854 mm

7. Measure distance A at top of seat back and bottom of seat.
   - A_t = 677 mm  
   - A_b = 851 mm

8. Is distance E_t + D_t equal to or greater than distance A_t + C_t? Yes – Pass; No – Fail  
   - PASS

9. Is distance E_b + D_b equal to or greater than distance A_b + C_b? Yes – Pass; No – Fail  
   - PASS

10. Measure distance U at inboard (i) and outboard (o) side of barrier.
    - U_i = 343 mm  
    - U_o = 347 mm

11. Measure distance V at inboard (i) and outboard (o) sides of seat.
    - V_i = 355 mm  
    - V_o = 366 mm
## DATA SHEET 6 (CONTINUED)

**RESTRAINING BARRIER POSITION AND PROJECTED REAR SURFACE AREA**

<table>
<thead>
<tr>
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<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.</td>
<td>Is $U_i$ equal to or less than $V_i$? Yes – Pass; No – Fail</td>
</tr>
<tr>
<td>14.</td>
<td>Is $U_o$ equal to or less than $V_o$? Yes – Pass; No – Fail</td>
</tr>
</tbody>
</table>

15. Measure distance $S$ at inboard (I) and outboard (o) side of barrier.
   - $S_i = 642$ mm
   - $S_o = 651$ mm

16. Measure distance $W$ at inboard (i) and outboard (o) sides of seat.
   - $W_i = 620$ mm
   - $W_o = 611$ mm

17. Is $S_i + U_i$ equal to or greater than $W_i + V_i$? Yes – Pass; No – Fail | **PASS** |

18. Is $S_o + U_o$ equal to or greater than $W_o + V_o$? Yes – Pass; No – Fail | **PASS** |

19. Compute area $(W \times A) = 470,242$ mm$^2$

20. Compute area $(E \times S) = 500,714.25$ mm$^2$

21. Is $(W \times A)$ equal to or less than $(E \times S)$? Yes – Pass; No – Fail | **PASS** |

**COMMENTS:** None

Recorded By: [Signature]

Approved By: [Signature]  Date: 01/28/2009
DATA SHEET 6
RESTRAINING BARRIER POSITION AND PROJECTED REAR SURFACE AREA

Test Vehicle: 2009 BLUE BIRD MICRO BIRD SCHOOL BUS  
NHTSA No.: C90902  
Test Lab: MGA RESEARCH CORPORATION  
Test Dates: 01/27/09 – 05/13/09

BARRIER NUMBER: B8

1. Measure distance T from SRP of seat immediately aft of barrier in a horizontal longitudinal line forward to barrier.  T= 531 mm.

<table>
<thead>
<tr>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
</table>
| 2. | Is distance T equal to or less than 610 mm? (S5.2)  
Yes – Pass; No – Fail |  
PASS |

3. Measure distance D at top (t) and bottom (b) of barrier.  
   D_t = 106 mm  
   D_b = 0 mm

4. Measure distance C at top (t) and bottom (b) of seat back.  
   C_t = 108 mm  
   C_b = 0 mm

<table>
<thead>
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<tr>
<td>5.</td>
<td>Is D_t equal to or less than C_t? Yes – Pass; No – Fail</td>
</tr>
</tbody>
</table>
PASS |

<table>
<thead>
<tr>
<th></th>
<th>PASS/FAIL</th>
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</thead>
<tbody>
<tr>
<td>6.</td>
<td>Is D_b equal to or less than C_b? Yes – Pass; No – Fail</td>
</tr>
</tbody>
</table>
PASS |

7. Measure distance E at top of barrier and bottom of barrier.  
   E_t = 706 mm  
   E_b = 846 mm

8. Measure distance A at top of seat back and bottom of seat.  
   A_t = 702 mm  
   A_b = 841 mm

<table>
<thead>
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<th>PASS/FAIL</th>
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</thead>
</table>
| 9. | Is distance E_t + D_t equal to or greater than distance A_t + C_t?  
Yes – Pass; No – Fail |  
PASS |

<table>
<thead>
<tr>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
</table>
| 10. | Is distance E_b + D_b equal to or greater than distance A_b + C_b?  
Yes – Pass; No – Fail |  
PASS |

11. Measure distance U at inboard (i) and outboard (o) side of barrier.  
   U_i = 340 mm  
   U_o = 339 mm

12. Measure distance V at inboard (i) and outboard (o) sides of seat.  
   V_i = 345 mm  
   V_o = 372 mm
### DATA SHEET 6 (CONTINUED)

#### RESTRAINING BARRIER POSITION AND PROJECTED REAR SURFACE AREA

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.</td>
<td>Is $U_i$ equal to or less than $V_i$? Yes – Pass; No – Fail</td>
<td><strong>PASS</strong></td>
</tr>
<tr>
<td>14.</td>
<td>Is $U_o$ equal to or less than $V_o$? Yes – Pass; No – Fail</td>
<td><strong>PASS</strong></td>
</tr>
</tbody>
</table>

15. Measure distance $S$ at inboard (I) and outboard (o) side of barrier.

- $S_I = 645$ mm
- $S_o = 654$ mm

16. Measure distance $W$ at inboard (i) and outboard (o) sides of seat.

- $W_I = 615$ mm
- $W_o = 603$ mm

<table>
<thead>
<tr>
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<th>PASS/FAIL</th>
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<tbody>
<tr>
<td>17.</td>
<td>Is $S_i + U_i$ equal to or greater than $W_i + V_i$? Yes – Pass; No – Fail</td>
<td><strong>PASS</strong></td>
</tr>
<tr>
<td>18.</td>
<td>Is $S_o + U_o$ equal to or greater than $W_o + V_o$? Yes – Pass; No – Fail</td>
<td><strong>PASS</strong></td>
</tr>
</tbody>
</table>

19. Compute area $(W \times A) = 469,844$ mm$^2$

20. Compute area $(E \times S) = 504,012$ mm$^2$

<table>
<thead>
<tr>
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<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.</td>
<td>$(W \times A)$ equal to or less than $(E \times S)$? Yes – Pass; No – Fail</td>
<td><strong>PASS</strong></td>
</tr>
</tbody>
</table>

**COMMENTS:** None

**Recorded By:** Brian Roach

**Approved By:** Michael Javoy  
**Date:** 01/28/2009
1. Locate x-y reference point on sketch above for head form impact locations. (Label the positive and negative directions, if applicable)
2. Identify head form impact location on sketch by placing H1, H2, H3, H4, H5, H6, and H7 in the appropriate location.
3. Define and mark on graphic above, the plane of reference for head form impact angle:
   - $0^\circ$ = Parallel with Floor, (+) is Up, (-) is Down
   - X = From Inboard Edge of Seat
   - Y = Measured Vertically from the SRP
4. Complete the following table:

<table>
<thead>
<tr>
<th>Head Impact &amp; Test #</th>
<th>Location (a)</th>
<th>Speed Trap Impact Velocity** mps</th>
<th>Derived Velocity mps</th>
<th>Contact Area (CA) mm²</th>
<th>CA ≥ 1935 mm²</th>
<th>Yes-Pass</th>
<th>No-Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>Y</td>
<td>Angle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H1</td>
<td>-489</td>
<td>424</td>
<td>0</td>
<td>1.59</td>
<td>2.11</td>
<td>4720</td>
<td>PASS</td>
</tr>
<tr>
<td>H2</td>
<td>-364</td>
<td>423</td>
<td>0</td>
<td>1.60</td>
<td>1.65</td>
<td>5200</td>
<td>PASS</td>
</tr>
<tr>
<td>H3</td>
<td>-254</td>
<td>422</td>
<td>0</td>
<td>1.60</td>
<td>1.12</td>
<td>5300</td>
<td>PASS</td>
</tr>
<tr>
<td>H4</td>
<td>-151</td>
<td>424</td>
<td>0</td>
<td>1.60</td>
<td>1.89</td>
<td>5350</td>
<td>PASS</td>
</tr>
<tr>
<td>H5</td>
<td>-524</td>
<td>309</td>
<td>0</td>
<td>1.55</td>
<td>1.77</td>
<td>5450</td>
<td>PASS</td>
</tr>
<tr>
<td>H6</td>
<td>-418</td>
<td>311</td>
<td>0</td>
<td>1.57</td>
<td>1.57</td>
<td>5050</td>
<td>PASS</td>
</tr>
<tr>
<td>H7</td>
<td>-311</td>
<td>309</td>
<td>0</td>
<td>1.60</td>
<td>1.56</td>
<td>5270</td>
<td>PASS</td>
</tr>
</tbody>
</table>

* Contact Velocity from Item 7 below
** Velocity Range = 1.52 mps, +0.08, -0 mps

5. Attach Contact Area Prints.
6. Attach acceleration versus time plots for each impact.
7. Integrate the acceleration versus time plots and attach plots of the results that show velocity versus time.

Comments: (a) All coordinate measurements are referenced to the point where the horizontal plane through the SRP intersects the vertical line tangent to the inboard edge at the seat. For Seat No. S1 the reference point is on the right side of the seat.

Recorded By: [Signature]
Approved By: [Signature] Date: 03/04/2009
1. Locate x-y reference point on sketch above for head form impact locations. (Label the positive and negative directions, if applicable)

2. Identify head form impact location on sketch by placing H1, H2, H3, H4 and H5 in the appropriate location.

3. Define and mark on graphic above, the plane of reference for head form impact angle:

   0° = Parallel with Floor, (+) is Up, (-) is Down
   X = From Inboard Edge of Seat
   Y = Measured Vertically from the SRP
DATA SHEET 8 (CONTINUED)
HEAD FORM IMPACT CONTACT AREA REQUIREMENT

4. Complete the following table:

<table>
<thead>
<tr>
<th>Head Impact &amp; Test #</th>
<th>Location (a)</th>
<th>Speed Trap Impact Velocity** mps</th>
<th>Derived Velocity mps</th>
<th>Contact Area (CA) mm²</th>
<th>CA ≥ 1935 mm²</th>
<th>Yes-Pass</th>
<th>No-Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>Y</td>
<td>Angle</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H1</td>
<td>-672</td>
<td>432</td>
<td>0</td>
<td>1.55</td>
<td>1.76</td>
<td>5310</td>
<td>PASS</td>
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<tr>
<td>H2</td>
<td>-576</td>
<td>438</td>
<td>0</td>
<td>1.56</td>
<td>1.68</td>
<td>4470</td>
<td>PASS</td>
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<tr>
<td>H3</td>
<td>-463</td>
<td>436</td>
<td>0</td>
<td>1.56</td>
<td>2.16</td>
<td>3950</td>
<td>PASS</td>
</tr>
<tr>
<td>H4</td>
<td>-656</td>
<td>336</td>
<td>0</td>
<td>1.57</td>
<td>1.49</td>
<td>5160</td>
<td>PASS</td>
</tr>
<tr>
<td>H5</td>
<td>-542</td>
<td>335</td>
<td>0</td>
<td>1.56</td>
<td>1.64</td>
<td>4610</td>
<td>PASS</td>
</tr>
</tbody>
</table>

* Contact Velocity from Item 7 below
** Velocity Range = 1.52 mps, +0.08, -0 mps

5. Attach Contact Area Prints.
6. Attach acceleration versus time plots for each impact.
7. Integrate the acceleration versus time plots and attach plots of the results that show velocity versus time.

Comments: (a) All measurements are referenced to the point where the horizontal plane through the SRP intersects the vertical line tangent to the inboard edge at the barrier. For Barrier No. B1 the reference point is on the right side of the barrier.

Recorded By: [Signature]
Approved By: [Signature] Date: 03/04/2009
1. Locate x-y reference point on sketch above for head form impact locations. (Label the positive and negative directions, if applicable)
2. Identify head form impact location on sketch by placing H8, H9, H10, H12, H13 and H14 in the appropriate location.
3. Define the plane of reference for knee form impact angle:
   0° = Parallel with Floor, (+) is Up, (-) is Down
   X = From Inboard Edge of the Seat
   Y = Measured Vertically from the SRP
DATA SHEET 9 (CONTINUED)
HEAD FORM IMPACT ENERGY REQUIREMENT

4. Complete the following table:

<table>
<thead>
<tr>
<th>Head impact &amp; Test #</th>
<th>Location</th>
<th>Speed Trap Impact Velocity ** mps</th>
<th>Derived Velocity ** mps</th>
<th>Max HIC</th>
<th>Energy Req'd Joules</th>
<th>Column 5 &lt; 1000 Joules</th>
<th>Column 6 &gt; 4.5 Joules</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>Y</td>
<td>Angle</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H8</td>
<td>448</td>
<td>404</td>
<td>0</td>
<td>6.63</td>
<td>7.03</td>
<td>144</td>
<td>7.10</td>
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<tr>
<td>H9</td>
<td>327</td>
<td>409</td>
<td>0</td>
<td>6.69</td>
<td>6.76</td>
<td>132</td>
<td>7.68</td>
</tr>
<tr>
<td>H10</td>
<td>222</td>
<td>402</td>
<td>0</td>
<td>6.67</td>
<td>6.71</td>
<td>131</td>
<td>6.51</td>
</tr>
<tr>
<td>H12</td>
<td>394</td>
<td>312</td>
<td>0</td>
<td>6.69</td>
<td>6.84</td>
<td>184</td>
<td>8.76</td>
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<tr>
<td>H13</td>
<td>288</td>
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<td>6.63</td>
<td>6.36</td>
<td>169</td>
<td>11.49</td>
</tr>
<tr>
<td>H14</td>
<td>167</td>
<td>311</td>
<td>0</td>
<td>6.68</td>
<td>6.63</td>
<td>145</td>
<td>12.89</td>
</tr>
</tbody>
</table>

* Impact velocity from item No. 6 below
** Impact velocity range = 6.69 mps, +0, -0.08 mps

5. Attach acceleration versus time plots for each impact.
6. Integrate the acceleration versus time plots and attach plots of the results that show velocity versus time.

Comments:  (a) All measurements are referenced to the point where the horizontal plane through the SRP intersects the vertical line tangent to the inboard edge at the seat. For Seat No. S8 the reference point is on the left side of the seat.

Recorded By: [Signature]
Approved By: [Signature]  Date: 03/04/2009
1. Locate x-y reference point on sketch above for head form impact locations. (Label the positive and negative directions, if applicable)
2. Identify head form impact location on sketch by placing H8 in the appropriate location.
3. Define the plane of reference for knee form impact angle:
   0° = Parallel with Floor, (+) is Up, (-) is Down
   X = From Inboard Edge of the Seat
   Y = Measured Vertically from the SRP
**DATA SHEET 9 (CONTINUED)**

**HEAD FORM IMPACT ENERGY REQUIREMENT**

4. Complete the following table:

<table>
<thead>
<tr>
<th>Head impact &amp; Test #</th>
<th>Location</th>
<th>Speed Trap Impact Velocity ** mps</th>
<th>Derived Velocity ** mps</th>
<th>Max HIC</th>
<th>Energy Req’d Joules</th>
<th>Column 5 &lt; 1000</th>
<th>Column 6 &gt; 4.5 Joules</th>
</tr>
</thead>
<tbody>
<tr>
<td>H8</td>
<td>X -321</td>
<td>Y 436</td>
<td>Angle 0</td>
<td>6.63</td>
<td>6.43</td>
<td>161</td>
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</table>

* Impact velocity from item No. 6 below

** Impact velocity range = 4.86 mps, +0.08, -0 mps for contact area, +0, -0.08 mps for force

5. Attach acceleration versus time plots for each impact.

6. Integrate the acceleration versus time plots and attach plots of the results that show velocity versus time.

Comments: 
(a) All measurements are referenced to the point where the horizontal plane through the SRP intersects the vertical line tangent to the inboard edge at the barrier.

(b) Testing was discontinued after H8 at the request of the COTR due to a previous non-compliance on Barrier No. B1.

Recorded By: 

Approved By: Michael Jarvis 
Date: 03/04/2009
DATA SHEET 10
KNEE FORM IMPACT TEST

Test Vehicle: 2009 BLUE BIRD MICRO BIRD SCHOOL BUS  NHTSA No.: C90902
Test Lab: MGA RESEARCH CORPORATION  Test Dates: 01/27/09 – 05/13/09

SEAT NUMBER: S1

REAR SURFACE

1. Locate x-y reference point on sketch above for knee form impact locations. (Label the positive and negative directions, if applicable)
2. Identify knee form impact location on sketch by placing K1, K2, K3, K4, K5, K6, K7, and K8 in the appropriate location.
3. Define the plane of reference for knee form impact angle:
   - $0^\circ$ = Parallel with Floor, (+) is Up, (-) is Down
   - $X$ = From Inboard Edge of the Seat
   - $Y$ = Measured Vertically from the SRP
### DATA SHEET 10 (CONTINUED)
#### KNEE FORM IMPACT TEST

4. Complete the following table:

<table>
<thead>
<tr>
<th>Knee impact &amp; Test #</th>
<th>Location (a)</th>
<th>Speed Trap Impact Velocity ** mps</th>
<th>Derived Velocity ** mps</th>
<th>Cont. Area mm²</th>
<th>Resist Force (N)</th>
<th>Column 5 &gt; 1935 mm²</th>
<th>Column 6 &lt; 2669N</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>Y</td>
<td>Angle</td>
<td></td>
<td></td>
<td></td>
<td>Yes-Pass</td>
</tr>
<tr>
<td>K1***</td>
<td>-540</td>
<td>236</td>
<td>0</td>
<td>4.92</td>
<td>4.98</td>
<td>2870</td>
<td>2685</td>
</tr>
<tr>
<td>K2</td>
<td>-426</td>
<td>235</td>
<td>0</td>
<td>4.88</td>
<td>5.11</td>
<td>2990</td>
<td>2634</td>
</tr>
<tr>
<td>K3</td>
<td>-314</td>
<td>237</td>
<td>0</td>
<td>4.88</td>
<td>4.64</td>
<td>2940</td>
<td>2237</td>
</tr>
<tr>
<td>K4***</td>
<td>-199</td>
<td>236</td>
<td>0</td>
<td>4.88</td>
<td>5.17</td>
<td>3190</td>
<td>2797</td>
</tr>
<tr>
<td>K5</td>
<td>-84</td>
<td>237</td>
<td>0</td>
<td>4.86</td>
<td>5.12</td>
<td></td>
<td>2272</td>
</tr>
<tr>
<td>K6</td>
<td>-540</td>
<td>104</td>
<td>0</td>
<td>4.86</td>
<td>4.24</td>
<td></td>
<td>2043</td>
</tr>
<tr>
<td>K7</td>
<td>-426</td>
<td>107</td>
<td>0</td>
<td>4.85</td>
<td>4.58</td>
<td></td>
<td>2070</td>
</tr>
<tr>
<td>K8</td>
<td>-316</td>
<td>108</td>
<td>0</td>
<td>4.86</td>
<td>4.33</td>
<td></td>
<td>1991</td>
</tr>
</tbody>
</table>

* Impact velocity from item No. 7 below
** Impact velocity range = 4.86 mps, +0.08, -0 mps for contact area, +0, -0.08 mps for force
*** It was concluded through post-test analysis that the knee impact velocities were in excess of that required by FMVSS No. 222, S5.3.2.2. Therefore, the resistive forces recorded for K1 and K4 do not indicate test failures. The velocities indicated by the speed trap were lower than the true velocities due to longitudinal movement of the speed trap. Only knee impact tests on Seat No. S1 were affected.

5. Attach Contact Area Prints for K1, K2, K3 and K4.
6. Attach acceleration versus time plots for each impact.
7. Integrate the acceleration versus time plots and attach plots of the results that show velocity versus time for each impact K1 through K8.
8. Attach force vs. time plots for K5, K6, K7, and K8.

Comments: (a) All measurements are referenced to the point where the horizontal plane through the SRP intersects the vertical line tangent to the inboard edge at the seat.

Recorded By: [Signature]

Approved By: [Signature]  Date: 03/04/2009
DATA SHEET 10
KNEE FORM IMPACT TEST

Test Vehicle: 2009 BLUE BIRD MICRO BIRD SCHOOL BUS
Test Lab: MGA RESEARCH CORPORATION
NHTSA No.: C90902
Test Dates: 01/27/09 – 05/13/09

SEAT NUMBER: S8

1. Locate x-y reference point on sketch above for knee form impact locations. (Label the positive and negative directions, if applicable)
2. Identify knee form impact location on sketch by placing K9, K10, and K11 in the appropriate location.
3. Define the plane of reference for knee form impact angle:
   0° = Parallel with Floor, (+) is Up, (-) is Down
   X = From Inboard Edge of the Seat
   Y = Measured Vertically from the SRP
DATA SHEET 10 (CONTINUED)
KNEE FORM IMPACT TEST

4. Complete the following table:

<table>
<thead>
<tr>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)*</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knee impact &amp; Test #</td>
<td>Location (a)</td>
<td>Speed Trap Impact Velocity ** mps</td>
<td>Derived Velocity ** mps</td>
<td>Cont. Area mm²</td>
<td>Resist Force (N)</td>
<td>Column 5 &gt; 1935 mm²</td>
<td>Column 6 &lt; 2669N</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>Y</td>
<td>Angle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K9</td>
<td>206</td>
<td>102</td>
<td>0</td>
<td>4.79</td>
<td>4.56</td>
<td>2212</td>
<td>PASS</td>
</tr>
<tr>
<td>K10</td>
<td>89</td>
<td>102</td>
<td>0</td>
<td>4.86</td>
<td>5.11</td>
<td>2348</td>
<td>PASS</td>
</tr>
<tr>
<td>K11</td>
<td>156</td>
<td>236</td>
<td>0</td>
<td>4.82</td>
<td>4.81</td>
<td>2068</td>
<td>PASS</td>
</tr>
</tbody>
</table>

* Impact velocity from item No. 7 below
** Impact velocity range = 4.86 mps, +0.08, -0 mps for contact area, +0, -0.08 mps for force

5. Attach acceleration versus time plots for each impact.
6. Attach force vs. time plots for K9, K10 and K11.
7. Integrate the acceleration versus time plots and attach plots of the results that show velocity versus time for each impact K9 through K11.

Comments: (a) All measurements are referenced to the point where the horizontal plane through the SRP intersects the vertical line tangent to the inboard edge at the seat.

Recorded By: [Signature]

Approved By: [Signature] Date: 03/04/2009
1. Locate x-y reference point on sketch above for knee form impact locations. (Label the positive and negative directions, if applicable)
2. Identify knee form impact location on sketch by placing K1, K2, K3, K4, K5, and K6 in the appropriate location.
3. Define the plane of reference for knee form impact angle:
   0° = Parallel with Floor, (+) is Up, (-) is Down
   X = From Inboard Edge of the Seat
   Y = Measured Vertically from the SRP
4. Complete the following table:

<table>
<thead>
<tr>
<th>Knee impact &amp; Test #</th>
<th>Location (a)</th>
<th>Speed Trap Impact Velocity ** mps</th>
<th>Derived Velocity ** mps</th>
<th>Cont. Area mm²</th>
<th>Resist Force (N)</th>
<th>Column 5 &gt; 1935 mm²</th>
<th>Column 6 &lt; 2669N</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>Y</td>
<td>Angle</td>
<td></td>
<td></td>
<td></td>
<td>Yes-Pass No-Fail</td>
</tr>
<tr>
<td>K1</td>
<td>-669</td>
<td>229</td>
<td>0</td>
<td>4.93</td>
<td>4.73</td>
<td>3450</td>
<td>2522</td>
</tr>
<tr>
<td>K2</td>
<td>-538</td>
<td>233</td>
<td>0</td>
<td>4.92</td>
<td>5.06</td>
<td>3200</td>
<td>2458</td>
</tr>
<tr>
<td>K3</td>
<td>-411</td>
<td>236</td>
<td>0</td>
<td>4.91</td>
<td>4.73</td>
<td>3110</td>
<td>2837</td>
</tr>
<tr>
<td>K5</td>
<td>-304</td>
<td>232</td>
<td>0</td>
<td>4.89</td>
<td>4.51</td>
<td>4658</td>
<td></td>
</tr>
<tr>
<td>K6</td>
<td>-301</td>
<td>130</td>
<td>0</td>
<td>4.90</td>
<td>4.70</td>
<td>3992</td>
<td></td>
</tr>
</tbody>
</table>

* Impact velocity from item No. 7 below

** Impact velocity range = 4.86 mps, +0.08, -0 mps for contact area, +0, -0.08 mps for force

5. Attach Contact Area Prints for K1, K2 and K3.
6. Attach acceleration versus time plots for each impact.
7. Integrate the acceleration versus time plots and attach plots of the results that show velocity versus time for each impact K1 through K6.

Comments: (a) All coordinate measurements are referenced to the point where the horizontal plane through the SRP intersects the vertical line tangent to the inboard edge at the barrier.
## DATA SHEET 11
### SEAT BELT ASSEMBLY ANCHORAGES

**Test Vehicle:** 2009 BLUE BIRD MICRO BIRD SCHOOL BUS  
**Test Lab:** MGA RESEARCH CORPORATION  
**NHTSA No.:** C90902  
**Test Dates:** 01/27/09 – 05/13/09

**SEAT LOCATION: S4**

<table>
<thead>
<tr>
<th>Seat Location</th>
<th>Seating Location</th>
<th>Anchor Type</th>
<th>Measured Spacing (mm) *</th>
<th>Measured Angle **</th>
<th>Load Application Angle (degrees)</th>
<th>Side View Horizontal Load Angle</th>
<th>Plan View From Vehicle Center Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>S4</td>
<td>Left</td>
<td>1</td>
<td>334</td>
<td>74.4°</td>
<td>10.4°</td>
<td>0°</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Right</td>
<td>1</td>
<td>335</td>
<td>74.5°</td>
<td>10.3°</td>
<td>0°</td>
<td></td>
</tr>
</tbody>
</table>

*The spacing for an individual seat belt assembly anchorage shall be at least 165mm apart as measured between the vertical center lines of the bolt holes.

**Specified angle range above horizontal to be 20° to 75°.

<table>
<thead>
<tr>
<th>Seat Location</th>
<th>Seating Location</th>
<th>Required Load (Newtons)</th>
<th>Actual Max. Test Load (Newtons)</th>
<th>Pass/Fail</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>S4</td>
<td>Left</td>
<td>22,000</td>
<td>22,127</td>
<td>PASS</td>
<td>NONE</td>
</tr>
<tr>
<td></td>
<td>Right</td>
<td>22,000</td>
<td>22,092</td>
<td>PASS</td>
<td>NONE</td>
</tr>
</tbody>
</table>

**COMMENTS:** None

Recorded By:  
Approved By: [Signature]  
Date: 05/13/2009
1. No. of designated seating positions (DSP): 16, plus driver

2. Type of seat belt at each passenger DSP (571.208 S4.1.2.1, S4.1.2.2, S4.1.2.3)

<table>
<thead>
<tr>
<th>Belt Type (Type 1 or 2 Required)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seat No.</td>
</tr>
<tr>
<td>DSP #1 Inboard</td>
</tr>
<tr>
<td>DSP #2 Outboard</td>
</tr>
</tbody>
</table>

3. Type of retractor at each passenger DSP: (571.208 S7.1.1.2)

<table>
<thead>
<tr>
<th>Retractor Type (Manual, ALR, ELR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seat No.</td>
</tr>
</tbody>
</table>

4. Single point, push-button, accessible latch release at each passenger DSP (571.208 S7.2(c))

<table>
<thead>
<tr>
<th>Pass: single point push-button</th>
<th>Fail: not single point push-button</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seat No.</td>
<td>S1</td>
</tr>
<tr>
<td>DSP #1 Inboard</td>
<td>PASS</td>
</tr>
<tr>
<td>DSP #2 Outboard</td>
<td>PASS</td>
</tr>
</tbody>
</table>
5. Latch plate and buckle must not pass through conduit or guide between seat
cushion and seat back at each passenger DSP. (571.208 S7.4.6)

Pass: latch plate and/or buckle will not fit through conduit or guide

Fail: latch plate and/or buckle will fit through conduit or guide

<table>
<thead>
<tr>
<th>Seat No.</th>
<th>S1</th>
<th>S2</th>
<th>S3</th>
<th>S4</th>
<th>S5</th>
<th>S6</th>
<th>S7</th>
<th>S8</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSP #1</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>DSP #2</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
</tr>
</tbody>
</table>

6. Either the latch plate, buckle, or webbing must stay on top or above the seat
when the seat belt is unbuckled and the remaining two parts must stay
accessible at each passenger DSP. (571.208 S7.4.6)

Pass: the seat belt meets the above requirements

Fail: the seat belt does not meet the above requirements

<table>
<thead>
<tr>
<th>Seat No.</th>
<th>S1</th>
<th>S2</th>
<th>S3</th>
<th>S4</th>
<th>S5</th>
<th>S6</th>
<th>S7</th>
<th>S8</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSP #1</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>DSP #2</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
</tr>
</tbody>
</table>

7. Seat belt fit test dummies

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Serial Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1 50% 6-Year old Child</td>
<td>FTSS 111</td>
</tr>
<tr>
<td>7.2 5% Adult Female</td>
<td>FTSS 511</td>
</tr>
<tr>
<td>7.3 50% Adult Male</td>
<td>FTSS 312</td>
</tr>
<tr>
<td>7.4 95% Adult Male</td>
<td>Denton 9566</td>
</tr>
</tbody>
</table>
8. Seat belt must fit persons whose dimensions range from those of a 50th percentile 6-year old child to those of a 95th percentile adult male. (571.208 S7.1.1)

Two seats checked
Pass: snug fitting seat belt  Fail: loose fitting seat belt

<table>
<thead>
<tr>
<th>Seat No.</th>
<th>S4</th>
<th>S5</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSP #1</td>
<td>50% C</td>
<td>PASS</td>
</tr>
<tr>
<td></td>
<td>95% AM</td>
<td>PASS</td>
</tr>
<tr>
<td>DSP #2</td>
<td>50% C</td>
<td>PASS</td>
</tr>
<tr>
<td></td>
<td>95% AM</td>
<td>PASS</td>
</tr>
</tbody>
</table>

9. Driver’s Seat (Not part of FMVSS 222)

<table>
<thead>
<tr>
<th>Belt Type</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic Restraint</td>
<td>No</td>
</tr>
<tr>
<td>Type of Automatic Restraint (if applicable)</td>
<td></td>
</tr>
</tbody>
</table>

Pass: snug fitting seat belt  Fail: loose fitting seat belt

<table>
<thead>
<tr>
<th>Percentage</th>
<th>5% AF</th>
<th>95% AM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PASS</td>
<td>PASS</td>
</tr>
</tbody>
</table>

COMMENTS: None

Recorded By: _____________________________

Approved By: ____________________________ DATE: 5/13/2009
DATA SHEET B2
SEAT BELT WARNING SYSTEM CHECK

Test Vehicle: **2009 BLUE BIRD MICRO BIRD SCHOOL BUS**
NHTSA No.: **C90902**
Test Lab: **MGA RESEARCH CORPORATION**
Test Dates: **01/27/09 – 05/13/09**

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
   Seconds: 5
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
   Seconds: 65
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
    Seconds: 0
13. Complete the following table with the data from 4, 8, and 12 to determine which option is used.
14. Record exactly the wording of the visual seat belt warning system:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Warning light specification</th>
<th>Audible signal</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: Stays On 60 seconds minimum</td>
<td>Item 4: 5</td>
<td>4 to 8 seconds</td>
</tr>
<tr>
<td>S7.3 (a)(2) Belt latched &amp; key on or start</td>
<td>Item 12: 0 Passive Belts Not Required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belt stowed &amp; key on or start</td>
<td>Item 8: Stays On 4 to 8 seconds</td>
<td>Item 4: 5</td>
<td>4 to 8 seconds</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).

Comments: A Ford E-350 Chassis from a 2009 TransTech Rondak bus was used.

Recorded By: __________________________
Approved By: __________________________ DATE: 5/13/2009
SECTION 4
INSTRUMENTATION AND EQUIPMENT LIST

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Description</th>
<th>Model/Serial No.</th>
<th>Cal. Date</th>
<th>Cal. Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load Cell</td>
<td>Interface</td>
<td>1210AF-5K / 62736</td>
<td>10/28/08</td>
<td>04/28/09</td>
</tr>
<tr>
<td>Load Cell</td>
<td>Interface</td>
<td>1210AF-5K / 62736</td>
<td>05/14/09</td>
<td>11/14/09</td>
</tr>
<tr>
<td>Load Cell</td>
<td>Interface</td>
<td>1210AF-25K-B / 137778</td>
<td>10/23/08</td>
<td>04/28/09</td>
</tr>
<tr>
<td>Load Cell</td>
<td>Interface</td>
<td>1210AF-25K-B / 137778</td>
<td>05/08/09</td>
<td>11/08/09</td>
</tr>
<tr>
<td>Inclinometer</td>
<td>Digital</td>
<td>Pro 360 / Comp Lab / 001</td>
<td>Daily</td>
<td>Daily</td>
</tr>
<tr>
<td>Load Cell</td>
<td>Interface</td>
<td>1210AF-300-B / 278321</td>
<td>11/13/08</td>
<td>05/13/09</td>
</tr>
<tr>
<td>String Pot.</td>
<td>Ametek</td>
<td>P-30A / 18389</td>
<td>11/13/08</td>
<td>05/13/09</td>
</tr>
<tr>
<td>String Pot.</td>
<td>Ametek</td>
<td>P-30A / 18389</td>
<td>05/05/09</td>
<td>11/05/09</td>
</tr>
<tr>
<td>Accel.</td>
<td>Entran</td>
<td>ECGS-S425-2000 / Y04628</td>
<td>11/13/08</td>
<td>05/13/09</td>
</tr>
<tr>
<td>Accel.</td>
<td>Entran</td>
<td>ECGS-S425-2000 / Y04628</td>
<td>05/05/09</td>
<td>11/05/09</td>
</tr>
<tr>
<td>Load Cell</td>
<td>PCB</td>
<td>1315-101-01A / 664</td>
<td>10/01/08</td>
<td>04/01/09</td>
</tr>
<tr>
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### SECTION 5

**PHOTOGRAPHS**

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Test Lab: MGA RESEARCH CORPORATION
NHTSA No.: C90902
Test Dates: 01/27/09 – 05/13/09
2009 BLUE BIRD MICRO BIRD SCHOOL BUS  
NHTSA No.: C90902  
MGA RESEARCH CORPORATION  
Test Dates: 01/27/09 – 05/13/09

¾ Rear View From Right Side of School Bus
Test Vehicle: 2009 BLUE BIRD MICRO BIRD SCHOOL BUS
NHTSA No.: C90902
Test Lab: MGA RESEARCH CORPORATION
Test Dates: 01/27/09 – 05/13/09
Test Vehicle: 2009 BLUE BIRD MICRO BIRD SCHOOL BUS
Test Lab: MGA RESEARCH CORPORATION
NHTSA No.: C90902
Test Dates: 01/27/09 – 05/13/09

Vehicle Interior View From Front to Rear
Test Vehicle: 2009 BLUE BIRD MICRO BIRD SCHOOL BUS

NHTSA No.: C90902

Test Dates: 01/27/09 – 05/13/09

Test Lab: MGA RESEARCH CORPORATION

Vehicle Interior View From Rear to Front
Pre-Test of Seat Cushion Retention Set Up View 1
Test Vehicle: 2009 BLUE BIRD MICRO BIRD SCHOOL BUS  
NHTSA No.: C90902  
Test Lab: MGA RESEARCH CORPORATION  
Test Dates: 01/27/09 – 05/13/09

Post-Test of Seat Back S7 Force Deflection Forward Test
Test Vehicle: 2009 BLUE BIRD MICRO BIRD SCHOOL BUS
Test Lab: MGA RESEARCH CORPORATION
NHTSA No.: C90902
Test Dates: 01/27/09 – 05/13/09

Post-Test of Seat Back S7 Force Deflection Forward Test
Pre-Test of Seat Back S3 Force Deflection Rearward Test
Post-Test of Seat Back S3 Force Deflection Rearward Test
Test Vehicle: 2009 BLUE BIRD MICRO BIRD SCHOOL BUS
Test Lab: MGA RESEARCH CORPORATION
NHTSA No.: C90902
Test Dates: 01/27/09 – 05/13/09

Post-Test of Seat S4 210 Test
Post-Test of Head and Knee Impact Locations on Seat S1
| Test Vehicle: | 2009 BLUE BIRD MICRO BIRD SCHOOL BUS | NHTSA No.: | C90902 |
| Test Lab: | MGA RESEARCH CORPORATION | Test Dates: | 01/27/09 – 05/13/09 |

Post-Test of Head and Knee Impact Locations on Barrier B1
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Seat Cushion Retention Seat S1

Seat Cushion Retention Seat S8
Seat Back Forward Deflection Seat S7 Lower Cylinder

**Forces (N) vs Time (sec)**

- Maximum: 6332 N @ 24.1 sec
- Minimum: -43 N @ 0.9 sec

**Forces (N) vs Displacement (mm)**

- Maximum: 6332 N @ 126 mm
- Minimum: -43 N @ 84 mm

Seat Back Forward Deflection Seat S7 Lower Cylinder
Seat Back Forward Deflection Seat S2 Lower Cylinder

**Force (N) vs Time (sec)**

- **File Name:** 099900222 Forward S2 lower F1
- **Test Description:** 099900222 Seat Back Force Deflection Forward S2 lower cylinder
- **Comment:** Specification: FMVSS 222 Seat Back Deflection Forward

- **Maximum:** 6250 N @ 33.6 sec
- **Minimum:** 450 N @ 0.0 sec

**Graph**

- **Force (N)**
  - Range: 0 to 7000
- **Time (sec)**
  - Range: 0 to 50

Seat Back Forward Deflection Seat S2 Lower Cylinder

**Force (N) vs Displacement (mm)**

- **File Name:** 099900222 Forward S2 lower F1_C
- **Test Description:** 099900222 Seat Back Force Deflection Forward S2 lower cylinder
- **Comment:** Specification: FMVSS 222 Seat Back Deflection Forward

- **Maximum:** 6250 N @ 40.1 mm
- **Minimum:** 450 N @ 0.0 mm

**Graph**

- **Force (N)**
  - Range: 0 to 7000
- **Displacement (mm)**
  - Range: 0 to 45
Displacement (mm) vs Time (sec)

Maximum: 255 mm @ 25 sec
Minimum: 0 mm @ 0 sec

Seat Back Forward Deflection Seat S3 Lower Cylinder

Force (N) vs Time (sec)

Minimum: 8170 N @ 15 sec
Minimum: -14 N @ 58 sec

Seat Back Forward Deflection Seat S3 Lower Cylinder
Force (N) vs Displacement (mm)

Maximum: 8170 N @ 127 mm  Minimum: -14 N @ 83 mm

Seat Back Forward Deflection Seat S3 Lower Cylinder
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)  
Component ID: Bluebird Micro Bird  
Location: S1 H1  
Test Date: 3/4/2009  
NHTSA #: C90902  
Speed trap: 1.59 m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)
Component ID: Bluebird Micro Bird
Location: S1 H2

Test Date: 3/4/2009
NHTSA #: C90902
Speed trap: 1.60 m/s

HEAD X Acceleration (G's) VS TIME (S)
HIC 36: 4.53  T1: 14.30 S  T2: 46.80 S
Max: 0.68 G's  Tmax: 0.07 S  Min: -9.99 G's  Tmin: 0.03 S

VELOCITY X (m/s) VS TIME (S)
Max: 1.67 m/s  Tmax: -0.01 S  Min: -1.21 m/s  Tmin: 0.07 S  VEL@IMP: 1.646m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)
Test Date: 3/4/2009
Component ID: Bluebird Micro Bird
Location: S1 H3
NHTSA #: C90902
Speed trap: 1.60 m/s

HEAD X Acceleration (G's) VS TIME (S)
Max: 0.48 G's
TMax: 0.08 S
Min: -10.00 G's
TMin: 0.03 S

VELOCITY X (m/s) VS TIME (S)
Max: 1.20 m/s
TMax: -0.01 S
Min: -2.43 m/s
TMin: 0.13 S
VEL@IMP: 1.116 m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)
Component ID: Bluebird Micro Bird
Location S1 H4
Test Date: 3/4/2009
NHTSA #: C90902
Speed trap: 1.60 m/s

HEAD X Acceleration (G's) VS TIME (S)
HIC 36: 3.87  T1: 14.10 S  T2: 48.20 S
Max: 1.49 G's
TMax: -0.01 S
Min: -9.16 G's
TMin: 0.03 S

VEL@IMP: 1.893 m/s

VELOCITY X (m/s) VS TIME (S)
Max: 1.90 m/s
TMax: 0.00 S
Min: -0.77 m/s
TMin: 0.06 S
VEL@IMP: 1.893 m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)
Component ID: Bluebird Micro Bird
Location: S1 H5
Test Date: 3/4/2009
NHTSA #: C90902
Speed trap: 1.55 m/s

HEAD X Acceleration (G's) VS TIME (S)

HIC 36: 3.32  T1: 17.70 S  T2: 52.10 S

Max: 1.18 G's
TMax: 0.11 S
Min: -8.52 G's
TMin: 0.04 S

VELOCITY X (m/s) VS TIME (S)

Max: 1.78 m/s
TMax: -0.01 S
Min: -0.80 m/s
TMin: 0.07 S
VEL@IMP: 1.773m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)
Test Date: 3/4/2009
Component ID: Bluebird Micro Bird
Location: S1 H6
NHTSA #: C90902
Speed trap: 1.57 m/s

HEAD X Acceleration (G's) VS TIME (S)
HIC 36: 3.76  T1: 19.00 S  T2: 55.00 S
Max: 0.60 G's
TMax: 0.11 S
Min: -8.56 G's
TMin: 0.04 S

VELOCITY X (m/s) VS TIME (S)
Max: 1.60 m/s
TMax: -0.01 S
Min: -1.26 m/s
TMin: 0.13 S
VEL@IMP: 1.57 m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)  Test Date: 3/4/2009
Component ID: NHTSA #: C90902
Location: S1 H7  Speed trap: 1.60 m/s

HEAD X Acceleration (G's) VS TIME (S)

Max: 0.78 G's  Tmax: 0.14 S
Min: -8.60 G's  Tmin: 0.04 S

VELLOCITY X (m/s) VS TIME (S)

Max: 1.58 m/s  Tmax: -0.01 S
Min: -1.23 m/s  Tmin: 0.07 S
VEL@IMP: 1.558m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)
Component ID: Bluebird Micro Bird
Location: B1 H1

Test Date: 5-4-2009
NHTSA #: C90902

Head X Acceleration (G's) VS TIME (S)

VELOCITY X (m/s) VS TIME (S)

Max: 24.35 G's
TMax: 0.14 S
Min: -15.53 G's
TMin: 0.14 S

Max: 4.45 m/s
TMax: 1.94 S
Min: -0.55 m/s
TMin: 0.06 S

VEL@IMP: 1.755m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)
Component ID: Bluebird Micro Bird
Location: B1 H4
Test Date: 5-4-2009
NHTSA #: C90902

Head X Acceleration (G's) VS TIME (S)
Max: 21.60 G's
TMax: 0.16 S
Min: -12.77 G's
TMin: 0.16 S

HIC 36: 3.50
T1: 20.60 S
T2: 48.30 S

VELOCITY X (m/s) VS TIME (S)
Max: 1.51 m/s
TMax: -0.01 S
Min: -1.41 m/s
TMin: 1.94 S
VEL@IMP: 1.489m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)  
Component ID: Bluebird Micro Bird  
Location: B1 H5  
Test Date: 5-4-2009  
NHTSA #: C90902

Head X Acceleration (G's) VS TIME (S)

- Max: 18.31 G's  
- Tmax: 0.17 S  
- Min: -10.37 G's  
- Tmin: 0.17 S

HIC 36: 2.73  
T1: 20.00 S  
T2: 49.40 S

Velocity X (m/s) VS TIME (S)

- Max: 1.71 m/s  
- Tmax: 1.94 S  
- Min: -0.73 m/s  
- Tmin: 0.08 S  
VEL@IMP: 1.635 m/s
HEAD FORM IMPACT (6.69 m/s) Test Date: 3-19-2009
Component ID: Bluebird Micro Bird Location: S8 H8 NHTSA#: C90902

Max: 9.35 G's TMax: -0.01 S Min: -63.48 G's Tmin: 0.01 S

Max: 7.13 m/s TMax: -0.01 S Min: -2.10 m/s Tmin: 0.04 S VEL@IMP: 7.025 m/s

Max: 478.06 N TMax: -0.01 S Min: -3,244.31 N Tmin: 0.01 S

Energy: 7.10 J
HEAD FORM IMPACT (6.69 m/s)  Test Date: 3-19-2009
Component ID: Bluebird Micro Bird  Location: S8 H9
NHTSA#: C90902

HEAD X ACCELERATION (G's) VS TIME (S)
Max: 6.76 G's
TMax: -0.01 S
Min: -65.52 G's
TMin: 0.01 S

VELOCITY X (m/s) VS TIME (S)
Max: 6.89 m/s
TMax: -0.01 S
Min: -2.56 m/s
TMin: 0.04 S
VEL@IMP: 6.762 m/s

FORCE X (N) VS TIME (S)
Max: 345.70 N
TMax: -0.01 S
Min: -3,348.68 N
TMin: 0.01 S

Energy: 7.68 J
HEAD FORM IMPACT (6.69 m/s)  
Test Date: 3-20-2009  
Component ID: Bluebird Micro Bird  
Location: S8 H10  
NHTSA#: C90902

**HEAD X ACCELERATION (G's) VS TIME (S)**

- Max: 11.26 G's  
- Tmax: -0.01 S  
- Min: -59.06 G's  
- Tmin: 0.01 S

**VELOCITY X (m/s) VS TIME (S)**

- Max: 6.85 m/s  
- Tmax: -0.01 S  
- Min: -2.43 m/s  
- Tmin: 0.05 S  
- Vel@Imp: 6.713 m/s

**FORCExX (N) VS TIME (S)**

- Max: 575.75 N  
- Tmax: -0.01 S  
- Min: -3,018.79 N  
- Tmin: 0.01 S

**ENERGY**

- 6.51 J
HEAD FORM IMPACT (6.69 m/s)  Test Date: 3-21-2009
Component ID: Bluebird Micro Bird
Location: S8 H12
NHTSA#: C90902

Max: 9.04 G's  TMax: 0.05 S  Min: -77.90 G's  TMin: 0.01 S

Max: 6.99 m/s  TMax: -0.01 S  Min: -2.84 m/s  TMin: 0.05 S
VEL@IMP: 6.835 m/s

Max: 462.04 N  TMax: 0.05 S  Min: -3,981.33 N  TMin: 0.01 S

Energy: 8.76 J
HEAD FORM IMPACT (6.69 m/s)  
Test Date: 3-24-2009  
Component ID: Bluebird Micro Bird  
Location: S8 H13  
NHTSA#: C90902

HEAD X ACCELERATION (G's) VS TIME (S)
Hic: 169.32  
T1: 9.80 ms  
T2: 15.80 ms
Max: 6.60 G's  
TMax: 0.05 S  
Min: -76.93 G's  
TMin: 0.01 S

VELOCITY X (m/s) VS TIME (S)
Max: 6.48 m/s  
TMax: -0.01 S  
Min: -3.64 m/s  
TMin: 0.05 S  
VEL@IMP: 6.361 m/s

FORCE X (N) VS TIME (S)
Max: 337.44 N  
TMax: 0.05 S  
Min: -3,931.78 N  
TMin: 0.01 S

ENERGY: 11.49 J
HEAD FORM IMPACT (6.69 m/s)  
Test Date: 3-20-2009  
Component ID: Bluebird Micro Bird  
Location: S8 H14  
NHTSA#: C90902

**HEAD X ACCELERATION (G's) VS TIME (S)**

- Max: 7.39 G's
- Tmax: 0.05 S
- Min: -61.19 G's
- Tmin: 0.01 S

**VELOCITY X (m/s) VS TIME (S)**

- Max: 6.68 m/s
- Tmax: -0.01 S
- Min: -3.07 m/s
- Tmin: 0.05 S
- VEL@IMP: 6.625 m/s

**FORCE X (N) VS TIME (S)**

- Max: 377.74 N
- Tmax: 0.05 S
- Min: -3,127.36 N
- Tmin: 0.01 S

**Energy: 12.89 J**
HEAD FORM IMPACT (6.69 m/s) Test Date: 5-4-09
Component ID: Bluebird Microbird Location: B1 H8
NHTSA#: C90902

HEAD X ACCELERATION (G's) VS TIME (S)
Hic: 161.32 T1: 5.60 ms T2: 10.00 ms
Max: 3.38 G's Tmax: -0.01 S
Min: -84.35 G's Tmin: 0.01 S

VELOCITY X (m/s) VS TIME (S)
Max: 6.52 m/s Tmax: -0.01 S
Min: -3.78 m/s Tmin: 0.07 S
VEL@IMP: 6.434 m/s

FORCE X (N) VS TIME (S)
Max: 172.96 N Tmax: -0.01 S
Min: -4,311.12 N Tmin: 0.01 S

Energy: 4.86 J
FMVSS 222 KNEE FORM IMPACTS
Component ID: Bluebird Micro Bird
Location: S1 K1

Test Date: 3/4/2009
NHTSA #: C90902

**KNEE X Acceleration (G's) VS TIME (S)**
- Max: 27.51 G's
- Tmax: 0.04 s
- Min: -60.43 G's
- Tmin: 0.09 s

**VELOCITY X (m/s) VS TIME (S)**
- Max: 5.03 m/s
- Tmax: 0.07 s
- Min: -2.62 m/s
- Tmin: 0.14 s
- VEL@IMP: 4.98 m/s

**FORCE X (N) VS TIME (S)**
- Max: 1,222.61 N
- Tmax: 0.04 s
- Min: -2,685.38 N
- Tmin: 0.09 s
FMVSS 222 KNEE FORM IMPACTS
Component ID: Bluebird Micro Bird
Location: S1 K2

Test Date: 3/4/2009
NHTSA #: C90902

KNEE X Acceleration (G's) VS TIME (S)
Max: 29.31 G's
TMax: 0.04 s
Min: -59.27 G's
TMin: 0.10 s

VELOCITY X (m/s) VS TIME (S)
Max: 5.14 m/s
TMax: 0.07 s
Min: -2.42 m/s
TMin: 0.14 s
VEL@IMP: 5.11 m/s

FORCE X (N) VS TIME (S)
Max: 1,302.63 N
TMax: 0.04 s
Min: -2,634.09 N
TMin: 0.10 s
FMVSS 222 KNEE FORM IMPACTS
Component ID: Bluebird Micro Bird
Location: S1 K3
Test Date: 3-12-2009
NHTSA #: C90902

KNEE X Acceleration (G's) VS TIME (S)
- Max: 23.03 G's
- Tmax: 0.03 s
- Min: -50.34 G's
- Tmin: 0.09 s

VELOCITY X (m/s) VS TIME (S)
- Max: 4.67 m/s
- Tmax: 0.06 s
- Min: -2.36 m/s
- Tmin: 0.14 s
- Vel@imp: 4.64 m/s

FORCE X (N) VS TIME (S)
- Max: 1,023.28 N
- Tmax: 0.03 s
- Min: -2,237.01 N
- Tmin: 0.09 s
FMVSS 222 KNEE FORM IMPACTS
Component ID: Bluebird Micro Bird
Location: S1 K4
Test Date: 3/4/2009
NHTSA #: C90902

**Knee X Acceleration (G's) VS TIME (S)**
- Max: 30.63 G's
- Tmax: 0.04 s
- Min: -62.95 G's
- Tmin: 0.09 s

**Velocity X (m/s) VS TIME (S)**
- Max: 5.18 m/s
- Tmax: 0.07 s
- Min: -2.30 m/s
- Tmin: 0.13 s
- Vel@Imp: 5.17 m/s

**Force X (N) VS TIME (S)**
- Max: 1,361.29 N
- Tmax: 0.04 s
- Min: -2,797.41 N
- Tmin: 0.09 s
FMVSS 222 KNEE FORM IMPACTS
Component ID: Bluebird Micro Bird
Location: S1 K5

Test Date: 3/4/2009
NHTSA #: C90902

KNEE X Acceleration (G's) VS TIME (S)
Max: 29.31 G's
TMax: 0.04 s
Min: -51.12 G's
TMin: 0.09 s

VELOCITY X (m/s) VS TIME (S)
Max: 5.13 m/s
TMax: 0.07 s
Min: -2.47 m/s
TMin: 0.12 s
VEL@IMP: 5.12 m/s

FORCE X (N) VS TIME (S)
Max: 1,302.73 N
TMax: 0.04 s
Min: -2,271.75 N
TMin: 0.09 s
FMVSS 222 KNEE FORM IMPACTS
Component ID: Bluebird Micro Bird
Location: S1 K7

Test Date: 3-12-2009
NHTSA #: C90902

KNEE X Acceleration (G's) VS TIME (S)
Max: 21.74 G's
TMax: 0.03 s
Min: -46.58 G's
TMin: 0.09 s

VELOCITY X (m/s) VS TIME (S)
Max: 4.59 m/s
TMax: 0.06 s
Min: -1.83 m/s
TMin: 0.13 s
VEL@IMP: 4.58 m/s

FORCE X (N) VS TIME (S)
Max: 966.02 N
TMax: 0.03 s
Min: -2,069.97 N
TMin: 0.09 s
FMVSS 222 KNEE FORM IMPACTS
Component ID: Bluebird Micro Bird
Location: S8 K9

Test Date: 3-12-2009
NHTSA #: C90902

KNEE X Acceleration (G's) VS TIME (S)
Max: 21.90 G's
TMax: 0.03 s
Min: -49.78 G's
TMin: 0.09 s

VELOCITY X (m/s) VS TIME (S)
Max: 4.58 m/s
TMax: 0.06 s
Min: -1.75 m/s
TMin: 0.13 s
VEL@IMP: 4.56 m/s

FORCE X (N) VS TIME (S)
Max: 973.44 N
TMax: 0.03 s
Min: -2,212.35 N
TMin: 0.09 s
FMVSS 222 KNEE FORM IMPACTS
Component ID: Bluebird Micro Bird
Location: S8 K10

Test Date: 3-10-2009
NHTSA #: C90902

KNEE X Acceleration (G's) VS TIME (S)
Max: 24.86 G's
TMax: 0.03 s
Min: -52.83 G's
TMin: 0.09 s

VELOCITY X (m/s) VS TIME (S)
Max: 5.11 m/s
TMax: 0.07 s
Min: -1.78 m/s
TMin: 0.11 s
VEL@IMP: 5.11 m/s

FORCE X (N) VS TIME (S)
Max: 1,104.97 N
TMax: 0.03 s
Min: -2,347.87 N
TMin: 0.09 s
FMVSS 222 KNEE FORM IMPACTS
Component ID: Bluebird Micro Bird
Location: S8 K11

Test Date: 3-12-2009
NHTSA #: C90902

KNEE X Acceleration (G's) VS TIME (S)
Max: 22.51 G's
TMax: 0.03 s
Min: -46.53 G's
TMin: 0.09 s

VELOCITY X (m/s) VS TIME (S)
Max: 4.81 m/s
TMax: 0.07 s
Min: -1.63 m/s
TMin: 0.13 s
VEL@IMP: 4.81 m/s

FORCE X (N) VS TIME (S)
Max: 1,000.15 N
TMax: 0.03 s
Min: -2,067.87 N
TMin: 0.09 s
FMVSS 222 KNEE FORM IMPACTS
Component ID: Bluebird Micro Bird
Location: B1 K1

Test Date: 5-4-2009
NHTSA #: C90902

Knee X Acceleration (G's) VS TIME (S)
Max: 23.66 G's
TMax: 0.04 s
Min: -56.74 G's
TMin: 0.09 s

Velocity X (m/s) VS TIME (S)
Max: 4.79 m/s
TMax: 0.06 s
Min: -2.65 m/s
TMin: 0.13 s
VEL@IMP: 4.73 m/s

Force X (N) VS TIME (S)
Max: 1,051.32 N
TMax: 0.04 s
Min: -2,521.66 N
TMin: 0.09 s
FMVSS 222 KNEE FORM IMPACTS
Component ID: Bluebird Micro Bird
Location: B1 K2

Test Date: 5-4-2009
NHTSA #: C90902

Knee X Acceleration (G's) VS TIME (S)
Max: 26.75 G's
TMax: 0.04 s
Min: -55.32 G's
TMin: 0.09 s

VELOCITY X (m/s) VS TIME (S)
Max: 5.07 m/s
TMax: 0.07 s
Min: -1.70 m/s
TMin: 0.13 s
VEL@IMP: 5.06 m/s

FORCE X (N) VS TIME (S)
Max: 1,188.88 N
TMax: 0.04 s
Min: -2,458.27 N
TMin: 0.09 s
FMVSS 222 KNEE FORM IMPACTS
Component ID: Bluebird Micro Bird
Location: B1 K3
Test Date: 5-4-2009
NHTSA #: C90902

Knee X Acceleration (G's) VS TIME (S)
Max: 24.54 G's
TMax: 0.04 s
Min: -63.85 G's
TMin: 0.09 s

VELOCITY X (m/s) VS TIME (S)
Max: 4.77 m/s
TMax: 0.07 s
Min: -2.19 m/s
TMin: 0.15 s
VEL@IMP: 4.73 m/s

FORCE X (N) VS TIME (S)
Max: 1,090.69 N
TMax: 0.04 s
Min: -2,837.46 N
TMin: 0.09 s
FMVSS 222 KNEE FORM IMPACTS
Component ID: Bluebird Micro Bird
Location: B1 K5
Test Date: 5-4-2009
NHTSA #: C90902

Knee X Acceleration (G's) VS TIME (S)
Max: 24.15 G's
TMax: 0.04 s
Min: -104.82 G's
TMin: 0.09 s

VELOCITY X (m/s) VS TIME (S)
Max: 4.58 m/s
TMax: 0.06 s
Min: -3.09 m/s
TMin: 0.15 s
VEL@IMP: 4.51 m/s

FORCE X (N) VS TIME (S)
Max: 1,073.20 N
TMax: 0.04 s
Min: -4,658.24 N
TMin: 0.09 s
FMVSS 222 KNEE FORM IMPACTS
Component ID: Bluebird Micro Bird
Location: B1 K6
Test Date: 5-4-2009
NHTSA #: C90902

Knee X Acceleration (G's) VS TIME (S)
Max: 25.52 G's
TMax: 0.03 s
Min: -89.83 G's
TMin: 0.09 s

VELOCITY X (m/s) VS TIME (S)
Max: 4.73 m/s
TMax: 0.07 s
Min: -2.02 m/s
TMin: 0.20 s
VEL@IMP: 4.7 m/s

FORCE X (N) VS TIME (S)
Max: 1,133.91 N
TMax: 0.03 s
Min: -3,991.91 N
TMin: 0.09 s
Seat S4 Anchorage Type 1 FMVSS 210

Force (N) vs Time (sec)

Maximum: 22127 N @ 29.4 sec
Minimum: 1602 N @ 50.3 sec

Seat S4 Anchorage Type 1 FMVSS 210

Force (N) vs Time (sec)

Maximum: 22092 N @ 43.5 sec
Minimum: 1568 N @ 50.1 sec

Seat S4 Anchorage Type 1 FMVSS 210
SECTION 7
WELT CONTACT POINTS

H1 / SEAT S1

H1 Blue Bird Micro Bird 47.2 cm²
SECTION 7 (CONTINUED)
WELT CONTACT POINTS

H2 / SEAT S1

H2 Blue Bird Micro Bird 52.0 cm²
SECTION 7 (CONTINUED)
WELT CONTACT POINTS

H3 / SEAT S1

H3 Blue Bird Micro Bird 53.0 cm²
H4 Blue Bird Micro Bird 53.5 cm$^2$
SECTION 7 (CONTINUED)
WELT CONTACT POINTS

H5 / SEAT S1

H5 Blue Bird Micro Bird 54.5 cm$^2$
SECTION 7 (CONTINUED)
WELT CONTACT POINTS

H6 / SEAT S1

H6 Blue Bird Micro Bird 50.5 cm$^2$
SECTION 7 (CONTINUED)
WELT CONTACT POINTS

H7 / SEAT S1

H7 Blue Bird Micro Bird 52.7 cm²
SECTION 7 (CONTINUED)
WELT CONTACT POINTS

H1 / BARRIER B1

H1 Blue Bird Micro Bird 53.1 cm²
SECTION 7 (CONTINUED)
WELT CONTACT POINTS

H2 / BARRIER B1

H2 Blue Bird Micro Bird 44.7 cm$^2$
SECTION 7 (CONTINUED)
WELT CONTACT POINTS

H3 / BARRIER B1

H3 Blue Bird Micro Bird 39.5 cm$^2$
SECTION 7 (CONTINUED)
WELT CONTACT POINTS

H4 / BARRIER B1

H4 Blue Bird Micro Bird 51.6 cm²
SECTION 7 (CONTINUED)
WELT CONTACT POINTS

H5 / BARRIER B1

H5 Blue Bird Micro Bird 46.1 cm²
SECTION 7 (CONTINUED)
WELT CONTACT POINTS

K1 / SEAT S1

K1 Blue Bird Micro Bird 28.7 cm$^2$
K2 / SEAT S1

K2 Blue Bird Micro Bird 29.9 cm²
SECTION 7 (CONTINUED)

WELT CONTACT POINTS

K3 / SEAT S1

K3 Blue Bird Micro Bird 29.4 cm²
SECTION 7 (CONTINUED)
WELT CONTACT POINTS

K4 / SEAT S1

K4 Blue Bird Micro Bird 31.9 cm²
SECTION 7 (CONTINUED)
WELT CONTACT POINTS

K1 / BARRIER B1

K1 Blue Bird Micro Bird 34.5 cm²
SECTION 7 (CONTINUED)
WELT CONTACT POINTS

K2 / BARRIER B1

K2 Blue Bird Micro Bird 32.0 cm²
SECTION 7 (CONTINUED)
WELT CONTACT POINTS

K3 / BARRIER B1

K3 Blue Bird Micro Bird 31.1 cm²
SECTION 8
BUS FLOOR PLAN

S4 S3 S2 S1

S5 S6 S7 S8

B1 B8
LABORATORY NOTICE OF TEST FAILURE TO OVSC

<table>
<thead>
<tr>
<th>Description</th>
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<td>FMVSS 222</td>
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<tr>
<td>Test Date:</td>
<td>May 4, 2009</td>
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<td>Test Vehicle:</td>
<td>Bluebird Micro bird</td>
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<td>Test Lab:</td>
<td>MGA Research Corp.</td>
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<td>C90902</td>
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<tr>
<td>Project Engineer:</td>
<td>Eric Peschman</td>
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<td>Build Date:</td>
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TEST FAILURE DESCRIPTION

During the Knee Impact test, the B1 barrier failed to provide the minimum resistive force at impact location K5 as required by S5.3.2.2. A repeat test at location K6 was performed with similar results.

FMVSS REQUIREMENTS DESCRIPTION

Paragraph S5.3.2.2: Leg Protection zone, “When any point on the rear surface of that part of a seat back or restraining barrier within any zone specified in S5.3.2.1 is impacted from any direction at 4.9 m/s by the knee form specified in S6.7, the resisting force of the impacted material shall not exceed 2,669 N and the contact area on the knee form surface shall not be less than 1,935 mm².”

Remarks: No remarks.

Notification to NHTSA (COTR): Lawrence Valvo

Date: May 4, 2009