SAFETY COMPLIANCE TESTING FOR
FMVSS NO. 222
SCHOOL BUS PASSENGER SEATING AND CRASH PROTECTION

2012 BLUE BIRD ALL AMERICAN D3 RE SCHOOL BUS
NHTSA NO.: CC0901

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

TEST DATES: SEPTEMBER 12, 2011 – OCTOBER 26, 2011
FINAL REPORT DATE: JANUARY 3, 2012

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
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WASHINGTON, D.C. 20590
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Prepared by: Eric Peschman, Project Engineer

Date: November 29, 2011

Reviewed by: Michael Janovicz, Program Manager

Date: November 29, 2011

FINAL REPORT ACCEPTED BY:

Edward E. Chan

Digitally signed by Edward E. Chan
DN: cn=Edward E. Chan, o=National Highway Traffic Safety Administration, ou=Office of Vehicle Safety Compliance, email=ed.chan@dot.gov, c=US
Date: 2011.12.30 12:24:09 -05'00'

Date of Acceptance
Compliance tests were conducted on the subject 2012 Blue Bird All American D3 RE School Bus, NHTSA No.: CC0901, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-222-04 for the determination of FMVSS 222 compliance.

Test Failure: See Section 2, Test Data Summary. See Section 9, Laboratory Notice of Test Failure.
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<td>9</td>
<td>Laboratory Notice of Test Failure to OVSC</td>
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SECTION 1
PURPOSE OF COMPLIANCE TEST

All tests were conducted on a 2012 Blue Bird All American D3 RE School Bus, NHTSA No.: CC0901, in accordance with the specifications of the Office of Vehicle Safety Compliance (OVSC) Test Procedures TP-222-04 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.
The passenger seating and crash protection tests were conducted from September 12, 2011 through October 26, 2011. All tests were conducted by MGA Research Corporation at the Wisconsin Operations. The test vehicle, 2012 Blue Bird All American D3 RE School Bus NHTSA No.: CC0901, does not appear to meet all the requirements of FMVSS 222.

FAILURE
During the restraining barrier force deflection test for Barrier No. B13, the area within the force deflection curve did not meet the minimum requirement of 1,356 joules. The total area was 1,353 Joules.
LINEAR AND AREA MEASUREMENTS
Seat to seat/barrier spacing was checked on all seats and found to be 571 mm or less as shown on Data Sheet No. 1.

The seat back height and front surface area of Seat Nos. S1, S15, S16 and S18 were measured in accordance with Section 12.1 of OVSC TP-222-04. As shown in Data Sheet No. 2 for S1, S15, S16 and S18, the seat back area is greater than ninety percent of the seat bench width multiplied by 610.

The restraining barrier position and projected rear surface area of Barrier Nos. B1, B6, B13, B16 and B18 were measured in accordance with OVSC TP-222-04. As shown in Data Sheet No. 3 for B1, B6, B13, B16 and B18, the projected perimeters of the seats fall completely within the perimeters of the restraining barriers.

SEAT CUSHION RETENTION
Seat No. S17 was tested in accordance with Section 12.3 of OVSC TP-222-04. Seat cushion weight was 5.35 kg for S17. The maximum force reached for S17 was 271.8 N, and the lower time limit boundary (t1) was approximately 4 seconds with approximate load duration of 11 seconds. As shown in Data Sheet No. 4, the seat cushion tested met all requirements.

SEAT BACK FORCE DEFLECTION TEST - FORWARD
Seat Nos. S1 and S6 were tested in accordance with Section 12.4 of OVSC TP-222-04. Seat bench width was determined to be 990 mm for S1 and S6. “W” was calculated to be 3. The seating reference point (SRP) was 473 mm above the bus floor. The deflection of the seat back at conclusion of lower loading bar loading at 1,557 W N load was 60 mm for S1 and 61 mm for S6. The allowable maximum deflection without moving the seat back to within 102 mm of another seat or restraining barrier was 356 mm for both seats. The stroke rate of the upper loading bar was determined by the test engineer to be 12.7 mm/sec. The location of the upper loading bar was 406 mm above the SRP. The tests were stopped when the maximum deflection of 356 mm was reached. The minimum required area under the force versus deflection curve of the upper loading bar was 452W or 1,356 joules for S1 and S6. As shown on Data Sheet No. 5, S1 and S6 met the force deflection forward requirements.
SEAT BACK FORCE DEFLECTION TEST - FORWARD
Seat No. S16 was tested in accordance with Section 12.4 of OVSC TP-222-04. Seat bench width was determined to be 750 mm. “W” was calculated to be 2. The seating reference point (SRP) was 473 mm above the bus floor. The deflection of the seat back at conclusion of lower loading bar loading at 1,557 W N load was 44 mm. The allowable maximum deflection without moving the seat back to within 102 mm of another seat or restraining barrier was 356 mm for both seats. The stroke rate of the upper loading bar was determined by the test engineer to be 12.7 mm/sec. The location of the upper loading bar was 406 mm above the SRP. The test was stopped when the maximum deflection of 356 mm was reached. The minimum required area under the force versus deflection curve of the upper loading bar was 452W or 904 joules for S16. As shown on Data Sheet No. 5, S16 met the force deflection forward requirements.

RESTRAINING BARRIER FORCE/DEFLECTION TEST
The left hand restraining Barrier No. B1 was tested in accordance with Section 12.4 of OVSC TP-222-04. Seat bench width of the aft seat was determined to be 990 mm. “W” was calculated to be 3 for B1. The SRP was 473 mm above the bus floor. The deflection of the restraining barrier at the conclusion of the lower loading bar loading at 1,557W was 51 mm. The allowable maximum deflection without moving the restraining barrier to within interference of a seat or door was 356 mm. The stroke rate of the upper loading bar was determined by the test engineer from test data to be 12.7 mm/sec. The location of the upper loading bar was 406 mm above the SRP. The test was stopped when the maximum deflection of 356 mm was reached. The area under the force versus deflection curve of the upper loading bar was 1,852 joules. The minimum required area under the force versus deflection curve of the upper loading bar was 452W or 1,356 joules. As shown on Data Sheet No. 6, B1 met the force deflection forward requirements.
SECTION 2 (CONTINUED)
TEST DATA SUMMARY

RESTRAINING BARRIER FORCE/DEFLECTION TEST
The right hand restraining Barrier No. B13 was tested in accordance with Section 12.4 of OVSC TP-222-04. Seat bench width of the aft seat was determined to be 990 mm. “W” was calculated to be 3 for B13. The SRP was 473 mm above the bus floor. The deflection of the restraining barrier at the conclusion of the lower loading bar loading at 1,557W was 57 mm. The allowable maximum deflection without moving the restraining barrier to within interference of a seat or door was 299 mm. The stroke rate of the upper loading bar was determined by the test engineer from test data to be 12.7 mm/sec. The location of the upper loading bar was 406 mm above the SRP. The test was stopped when the maximum force of 10,676 N was reached. The area under the force versus deflection curve of the upper loading bar was 1,353 joules. The minimum required area under the force versus deflection curve of the upper loading bar was 452W or 1,356 joules. As shown on Data Sheet No. 6, B13 did not meet the force deflection requirements.

The right hand restraining Barrier No. B16 was tested in accordance with Section 12.4 of OVSC TP-222-04. Seat bench width of the aft seat was determined to be 750 mm. “W” was calculated to be 2 for B16. The SRP was 473 mm above the bus floor. The deflection of the restraining barrier at the conclusion of the lower loading bar loading at 1,557W was 53 mm. The allowable maximum deflection without moving the restraining barrier to within interference of a seat or door was 356 mm. The stroke rate of the upper loading bar was determined by the test engineer from test data to be 12.7 mm/sec. The location of the upper loading bar was 406 mm above the SRP. The test was stopped when the maximum deflection of 356 mm was reached. The area under the force versus deflection curve of the upper loading bar was 1,330 joules. The minimum required area under the force versus deflection curve of the upper loading bar was 452W or 904 joules. As shown on Data Sheet No. 6, B16 met the force deflection forward requirements.
SECTION 2 (CONTINUED)
TEST DATA SUMMARY

SEAT BACK FORCE/DEFLECTION TEST - REARWARD
Seat Nos. S8 and S11 were tested in accordance with Section 12.4 of OVSC TP-222-04. Seat bench width was determined to be 990 mm for both S8 and S11. “W” was calculated to be 3. 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 8.8 mm/sec for S8 and S11. The location of the loading bar was 343 mm above the SRP. The tests were stopped when the maximum deflection of the seat back of 254 mm was achieved. The area under the force versus deflection curve of the loading bar was 1,143 joules for S8 and 1,092 joules for S11. The minimum required area under the force versus deflection curve of the loading bar was 316W or 948 joules. As shown in Data Sheet No. 7, S8 and S11 met the force deflection rearward requirements.

HEAD FORM IMPACT ZONE TESTS
Seat Nos. S2, S7, and S15 and Barrier Nos. B6 and B18 were tested in accordance with Section 12.6 of OVSC TP-222-04. The mass of the head form was 5.21 kg. All head form contact area, impact energy, and head injury criteria were met for Seat Nos. S2, S7, and S15 and Barrier Nos. B6 and B18. Data from these tests are presented in Data Sheet No. 8 and Data Sheet No. 9.

KNEE FORM IMPACT ZONE TESTS
Seat Nos. S2, S7, and S15 and Barrier Nos. B6 and B18 were tested in accordance with Section 12.7 of OVSC TP-222-04. The mass of the knee form was 4.53 kg. All knee form contact area criteria and impact energy criteria were met for Seat Nos. S2, S7, and S15 and Barrier Nos. B6 and B18. Data from these tests are presented on Data Sheet No. 10.

WHEELCHAIR SECUREMENT ANCHORAGEs AND DEVICES TESTS
Wheelchair anchorages and restraints for wheelchair location W4 were tested in accordance with Appendix A of OVSC TP-222-04. Seat belt anchorages and specially made high strength webbing straps were used to conduct the test. The LF and LR seat belt anchor points met the required load of 13,344 N. The RR seat belt anchor points met the required load of 26,688 N. The Upper torso seat belt anchor points met the required load of 6,672 N. Data from these tests are presented on Data Sheet No. C1.
**Administrative Data Sheet**

**Test Vehicle:** 2012 Blue Bird All American D3 RE School Bus  
**NHTSA No.:** CC0901  
**Test Lab:** MGA Research Corporation  
**Test Dates:** 09/12/11 – 10/26/11

### Incomplete Vehicle (If Applicable)

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<th>Item</th>
<th>Details</th>
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<td>Blue Bird</td>
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<tr>
<td>Make/Model</td>
<td>All American D3 RE</td>
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<tr>
<td>VIN</td>
<td>1BABLBPA8CF283351</td>
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<td>Certification Date</td>
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### Completed Vehicle (School Bus)

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<td>Year/Make/Model</td>
<td>2012 Blue Bird All American D3 RE</td>
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<td>VIN</td>
<td>1BABLBPA8CF283351</td>
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<tr>
<td>NHTSA No.</td>
<td>CC0901</td>
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<tr>
<td>Color</td>
<td>Yellow</td>
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<tr>
<td>GVWR</td>
<td>14,973 kg / 33,000 lb</td>
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<tr>
<td>Manufacture Date</td>
<td>12/10</td>
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### Dates

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<td>Start of Compliance Test</td>
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<td>Completion of Compliance Test</td>
<td>10/26/11</td>
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### Test Vehicle Disposition


Compliance Test: All tests were performed in accordance with the references outlined in TP-222-04.

**Recorded By:**  
**Approved By:**  
**Date:** 10/26/11
### GENERAL TEST DATA SHEET

**Test Vehicle:** 2012 Blue Bird All American D3 RE School Bus  
**NHTSA No.:** CC0901  
**Test Lab:** MGA Research Corporation  
**Test Dates:** 09/12/11 – 10/26/11

### SCHOOL BUS IDENTIFICATION

<table>
<thead>
<tr>
<th>Model Year/Mfr./Make/Model:</th>
<th>2012 / Blue Bird / All American D3 RE</th>
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<tr>
<td>Passenger Capacity:</td>
<td>1 Driver, 47 Passengers</td>
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<tr>
<td>NHTSA No.:</td>
<td>CC0901</td>
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<tr>
<td>VIN:</td>
<td>1BABLBPA8CF283351</td>
</tr>
<tr>
<td>Conventional or Forward Control:</td>
<td>Forward</td>
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<tr>
<td>Wheel Base:</td>
<td>6,229 mm</td>
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<tr>
<td>GAWR (Certification Label) FRONT:</td>
<td>5,603 kg / 12,350 lb</td>
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<td>GAWR (Certification Label) REAR:</td>
<td>9,528 kg / 21,000 lb</td>
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<td>GVWR (Certification Label) TOTAL:</td>
<td>14,973 kg / 33,000 lb</td>
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### TEST CONDITIONS

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<th>Date(s) of Test:</th>
<th>09/12/11 – 10/26/11</th>
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<tr>
<td>Ambient Temperature (°C):</td>
<td>21°C</td>
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<td>Required Temperature Range (°C):</td>
<td>0°C to 32°C</td>
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### SEAT IDENTIFICATION

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<th>Seat Manufacturer:</th>
<th>Blue Bird</th>
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<tr>
<td>Model Name &amp; Number:</td>
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<tr>
<td>Description of Seats:</td>
<td>Seat frames are constructed of 25.4 mm square steel tubing. The seat back is a steel pan welded to the tubing. The front of the seat is covered with 15 mm of soft foam. The rear of the seat back is covered with 15 mm Styrofoam and 25 mm of thick soft foam. The seat back vertical frame members are covered in 45 mm Styrofoam. The seat cushion is constructed of 8 mm plywood; which is 120 mm tapering to 80 mm seat foam. The seats are covered in 0.6 mm of vinyl.</td>
</tr>
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SECTION 3
COMPLIANCE TEST DATA

The following data sheets document the results of testing on the 2012 Blue Bird All American D3 RE School Bus, NHTSA No.: CC0901.
## DATA SHEET 1
### SEAT TO SEAT/BARRIER SPACING

**Test Vehicle:** 2012 Blue Bird All American D3 RE School Bus  
**NHTSA No.:** CC0901  
**Test Lab:** MGA Research Corporation  
**Test Dates:** 09/12/11 – 10/26/11

<table>
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<tr>
<th>Seat Number</th>
<th>Measurement of Spacing From SRP Forward to Seat/Barrier (mm)</th>
<th>Requirement ≤ 610 mm (≤ 24”)</th>
<th>Class 1 Buses Only</th>
<th>PASS/FAIL</th>
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<tr>
<td>S1</td>
<td>537</td>
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</tr>
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<td>S2</td>
<td>489</td>
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<td>S3</td>
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</tr>
<tr>
<td>S6</td>
<td>486</td>
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<td>PASS</td>
</tr>
<tr>
<td>S7</td>
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<tr>
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<tr>
<td>S18</td>
<td>514</td>
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<td>PASS</td>
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**Comments:** None

**Recorded By:** [Signature]

**Approved By:** [Signature]  
**Date:** 09/12/11
DATA SHEET 2
SEAT BACK HEIGHT AND FRONT SURFACE AREA TEST

Test Vehicle: 2012 Blue Bird All American D3 RE School Bus  NHTSA No.: CC0901
Test Lab: MGA Research Corporation  Test Dates: 09/12/11 – 10/26/11

SEAT NUMBER: S1

1. Maximum vertical height of the seat back above the SRP = 642 mm

<table>
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<tbody>
<tr>
<td>2. Is item 1 &gt; 610 mm? (S5.1.2) Yes – Pass; No – Fail</td>
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<td>PASS</td>
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</table>

3. Maximum transverse width of the seat cushion (W1) = 990 mm

4. Calculate the following: 0.75 x W1 = 742.5 mm

5. Calculate the following: 0.9 x W1 x 610 mm = 543,510 mm²

6. Project the front surface of the seat back onto a vertical transverse plane. Measure
   the projected surface area that falls between:
   - A horizontal plane that passes through the SRP and a horizontal plane 610
     mm above the SRP; and
   - A vertical longitudinal plane that passes through the inboard-most point of the
     seat cushion and a vertical longitudinal plane that passes through the
     outboard-most point of the seat cushion.

   Use the following for a typical trapezoidal shape:

6.1 Seat back width at 610 mm above the SRP height (A) = 875 mm

6.2 Seat back width at the SRP height (B) = 969 mm

6.3 Area = ½ (A+B) x 610 mm = 562,420 mm² – * 2,808 mm² = 559,612 mm²
### DATA SHEET 2 (CONTINUED)
**SEAT BACK HEIGHT & FRONT SURFACE AREA TEST**

<table>
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</tr>
<tr>
<td>8. Is item 6.3 &gt; item 5? (S5.1.2) Yes – Pass; No – Fail</td>
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Note: For a seat back area that is not trapezoidal in shape or has a large radius at the corner(s), the above described measuring method (item 6.3) must be modified as required to obtain accurate area measurements.

Comments: * Denotes area of the trapezoid outside of radius.

Recorded By: 

Approved By:  Michael January  Date: 09/12/11
1. Maximum vertical height of the seat back above the SRP = 661 mm

<table>
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<td>PASS</td>
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</table>

3. Maximum transverse width of the seat cushion (W1) = 750 mm
4. Calculate the following: \(0.75 \times W1 = 562.5\) mm
5. Calculate the following: \(0.9 \times W1 \times 610\) mm = \(411,750\) mm\(^2\)
6. Project the front surface of the seat back onto a vertical transverse plane. Measure the projected surface area that falls between:
   - A horizontal plane that passes through the SRP and a horizontal plane 610 mm above the SRP; and
   - A vertical longitudinal plane that passes through the inboard-most point of the seat cushion and a vertical longitudinal plane that passes through the outboard-most point of the seat cushion.

2. Use the following for a typical trapezoidal shape:
   - Seat back width at 610 mm above the SRP height (A) = 700 mm
   - Seat back width at the SRP height (B) = 750 mm
   - Area = \(\frac{1}{2} \times (A+B) \times 610\) mm = \(442,250\) mm\(^2\) – \(* 1,548\) mm\(^2\) = \(440,702\) mm\(^2\)
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<td>Is item 6.1 &gt; item 4? (S5.1.2) Yes – Pass; No – Fail</td>
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<tr>
<td>8.</td>
<td>Is item 6.3 &gt; item 5? (S5.1.2) Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
</tbody>
</table>

Note: For a seat back area that is not trapezoidal in shape or has a large radius at the corner(s), the above described measuring method (item 6.3) must be modified as required to obtain accurate area measurements.

Comments: * Denotes area of the trapezoid outside of radius.

Recorded By: [Signature]

Approved By: [Signature] Date: 09/12/11
SEAT BACK HEIGHT AND FRONT SURFACE AREA TEST

Test Vehicle: 2012 Blue Bird All American D3 RE School Bus
NHTSA No.: CC0901
Test Lab: MGA Research Corporation
Test Dates: 09/12/11 – 10/26/11

SEAT NUMBER: S16

1. Maximum vertical height of the seat back above the SRP = 750 mm

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<th>PASS/FAIL</th>
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<tbody>
<tr>
<td>2.</td>
<td>Is item 1 &gt; 610 mm? (S5.1.2) Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
</tbody>
</table>

3. Maximum transverse width of the seat cushion (W1) = 750 mm
4. Calculate the following: 0.75 x W1 = 562.5 mm
5. Calculate the following: 0.9 x W1 x 610 mm = 411,750 mm²
6. Project the front surface of the seat back onto a vertical transverse plane. Measure the projected surface area that falls between:
   - A horizontal plane that passes through the SRP and a horizontal plane 610 mm above the SRP; and
   - A vertical longitudinal plane that passes through the inboard-most point of the seat cushion and a vertical longitudinal plane that passes through the outboard-most point of the seat cushion.

   Use the following for a typical trapezoidal shape:

6.1 Seat back width at 610 mm above the SRP height (A) = 690 mm
6.2 Seat back width at the SRP height (B) = 745 mm
6.3 Area = \( \frac{1}{2} (A+B) \times 610 \text{ mm} = 437,675 \text{ mm}^2 - 3,852 \text{ mm}^2 = 433,823 \text{ mm}^2 \)
### SEAT BACK HEIGHT & FRONT SURFACE AREA TEST

<table>
<thead>
<tr>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. Is item 6.1 &gt; item 4? (S5.1.2) Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
<tr>
<td>8. Is item 6.3 &gt; item 5? (S5.1.2) Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
</tbody>
</table>

**Note:** For a seat back area that is not trapezoidal in shape or has a large radius at the corner(s), the above described measuring method (item 6.3) must be modified as required to obtain accurate area measurements.

**Comments:** * Denotes area of the trapezoid outside of radius.

**Recorded By:** [Signature]

**Approved By:** [Signature]  
**Date:** 09/12/11
DATA SHEET 2
SEAT BACK HEIGHT AND FRONT SURFACE AREA TEST

Test Vehicle: 2012 Blue Bird All American D3 RE School Bus
NHTSA No.: CC0901
Test Lab: MGA Research Corporation
Test Dates: 09/12/11 – 10/26/11

SEAT NUMBER: S18

1. Maximum vertical height of the seat back above the SRP = 645 mm

<table>
<thead>
<tr>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Is item 1 &gt; 610 mm? (S5.1.2) Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
</tbody>
</table>

3. Maximum transverse width of the seat cushion (W1) = 990 mm
4. Calculate the following: \(0.75 \times W1 = 742.5 \text{ mm}\)
5. Calculate the following: \(0.9 \times W1 \times 610 \text{ mm} = 543,510 \text{ mm}^2\)
6. Project the front surface of the seat back onto a vertical transverse plane. Measure the projected surface area that falls between:
   - A horizontal plane that passes through the SRP and a horizontal plane 610 mm above the SRP; and
   - A vertical longitudinal plane that passes through the inboard-most point of the seat cushion and a vertical longitudinal plane that passes through the outboard-most point of the seat cushion.

Use the following for a typical trapezoidal shape:

6.1 Seat back width at 610 mm above the SRP height (A) = 875 mm
6.2 Seat back width at the SRP height (B) = 969 mm
6.3 Area = \(\frac{1}{2} (A+B) \times 610 \text{ mm} = 562,420 \text{ mm}^2 – 3,960 \text{ mm}^2 = 558,460 \text{ mm}^2\)
### DATA SHEET 2 (CONTINUED)

**SEAT BACK HEIGHT & FRONT SURFACE AREA TEST**

<table>
<thead>
<tr>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. Is item 6.1 &gt; item 4? (S5.1.2) Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
<tr>
<td>8. Is item 6.3 &gt; item 5? (S5.1.2) Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
</tbody>
</table>

**Note:** For a seat back area that is not trapezoidal in shape or has a large radius at the corner(s), the above described measuring method (item 6.3) must be modified as required to obtain accurate area measurements.

**Comments:** * Denotes area of the trapezoid outside of radius.

Recorded By: [Signature]

Approved By: [Signature] Date: 09/12/11
DATA SHEET 3
RESTRAINING BARRIER POSITION AND PROJECTED REAR SURFACE AREA

Test Vehicle: 2012 Blue Bird All American D3 RE School Bus  
NHTSA No.: CC0901
Test Lab: MGA Research Corporation  
Test Dates: 09/12/11 – 10/26/11

BARRIER NUMBER: B1/S1

1. Measure the distance (X) from SRP of seat immediately aft of barrier in a horizontal longitudinal line forward to barrier.  \( X = 537 \) mm.

<table>
<thead>
<tr>
<th>2. Is distance ( X \leq 610 ) mm? (S5.2) Yes – Pass; No – Fail</th>
<th>PASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Measure distance ( U ) at inboard (i) and outboard (o) side of barrier. ( U_i = 358 ) mm, ( U_o = 338 ) mm</td>
<td></td>
</tr>
<tr>
<td>4. Measure distance ( V ) at inboard (i) and outboard (o) sides of seat. ( V_i = 473 ) mm, ( V_o = 473 ) mm</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. Is ( U_i \leq V_i )? Yes – Pass; No – Fail</th>
<th>PASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Is ( U_o \leq V_o )? Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
</tbody>
</table>

7. Maximum vertical height of the barrier above the SRP of the seat located immediately rearward of the barrier \( (S) = 660 \) mm

| 8. Is item 7 > 610 mm? (S5.2 & S5.1.2) Yes – Pass; No – Fail | PASS |

9. Maximum transverse width of the seat cushion of the seat immediately rearward of the barrier \( (W1) = 990 \) mm

10. Calculate the following: \( 0.75 \times W1 = 742.5 \) mm

11. Calculate the following: \( 0.9 \times W1 \times 610 \) mm = 543,510 mm²
DATA SHEET 3 (CONTINUED)

RESTRAINING BARRIER POSITION AND PROJECTED REAR SURFACE AREA

12. Project the front surface of the barrier onto a vertical transverse plane. Measure the projected surface area (± 2%) that falls between the following planes, which are determined relative to the seat located immediately rearward of the barrier:

• A horizontal plane that passes through the SRP and a horizontal plane 610 mm above the SRP; and

• A vertical longitudinal plane that passes through the inboard-most point of the seat cushion and a vertical longitudinal plane that passes through the outboard-most point of the seat cushion.

Use the following for a typical trapezoidal shape:

12.1 Seat back width at 610 mm above the SRP height (A) = 908 mm
12.2 Seat back width at the SRP height (B) = 968 mm
12.3 Area = ½ (A+B) x 610 mm = 572,180 mm²

Used this equation:

Area = ½ (A+B) x 610 mm = 572,180 mm² – * 1,260 mm² = 570,920 mm²

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.</td>
<td>Is item 12.1 &gt; item 10? (S5.1.2) Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
<tr>
<td>14.</td>
<td>Is item 12.3 &gt; item 11? (S5.1.2) Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
</tbody>
</table>

Note: For a seat back area that is not trapezoidal in shape or has a large radius at the corner(s), the above described measuring method (item 12.3) must be modified as required to obtain accurate area measurements.

Comments: * Denotes area of the trapezoid outside of radius.

Recorded By: [Signature]

Approved By: [Signature] Date: 09/12/11
Test Vehicle: 2012 Blue Bird All American D3 RE School Bus  
NHTSA No.: CC0901  
Test Lab: MGA Research Corporation  
Test Dates: 09/12/11 – 10/26/11

BARRIER NUMBER: B6/S6

1. Measure the distance (X) from SRP of seat immediately aft of barrier in a horizontal longitudinal line forward to barrier. $X = 486$ mm.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Is distance $X \leq 610$ mm? (S5.2) Yes – Pass; No – Fail</td>
<td>PASS</td>
<td></td>
</tr>
</tbody>
</table>

3. Measure distance $U$ at inboard (i) and outboard (o) side of barrier.

$U_i = 355$ mm  
$U_o = 346$ mm

4. Measure distance $V$ at inboard (i) and outboard (o) sides of seat.

$V_i = 473$ mm  
$V_o = 473$ mm

5. Is $U_i \leq V_i$? Yes – Pass; No – Fail  
   PASS

6. Is $U_o \leq V_o$? Yes – Pass; No – Fail  
   PASS

7. Maximum vertical height of the barrier above the SRP of the seat located immediately rearward of the barrier ($S$) = $664$ mm

8. Is item 7 $> 610$ mm? (S5.2 & S5.1.2) Yes – Pass; No – Fail  
   PASS

9. Maximum transverse width of the seat cushion of the seat immediately rearward of the barrier ($W_1$) = $990$ mm

10. Calculate the following: $0.75 \times W_1 = 742.5$ mm

11. Calculate the following: $0.9 \times W_1 \times 610$ mm = $543,510$ mm$^2$
12. Project the front surface of the barrier onto a vertical transverse plane. Measure the projected surface area (+ 2%) that falls between the following planes, which are determined relative to the seat located immediately rearward of the barrier:
   - A horizontal plane that passes through the SRP and a horizontal plane 610 mm above the SRP; and
   - A vertical longitudinal plane that passes through the inboard-most point of the seat cushion and a vertical longitudinal plane that passes through the outboard-most point of the seat cushion.

Use the following for a typical trapezoidal shape:

12.1 Seat back width at 610 mm above the SRP height (A) = 916 mm
12.2 Seat back width at the SRP height (B) = 977 mm
12.3 Area = ½ (A+B) x 610 mm = 577,365 mm\(^2\)
   Used this equation:
   Area = ½ (A+B) x 610 mm = 577,365 mm\(^2\) – * 1,296 mm\(^2\) = 576,069 mm\(^2\)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.</td>
<td>Is item 12.1 &gt; item 10? (S5.1.2) Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
<tr>
<td>14.</td>
<td>Is item 12.3 &gt; item 11? (S5.1.2) Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
</tbody>
</table>

Note: For a seat back area that is not trapezoidal in shape or has a large radius at the corner(s), the above described measuring method (item 12.3) must be modified as required to obtain accurate area measurements.

Comments: * Denotes area of the trapezoid outside of radius.

Recorded By: [Signature]

Approved By: [Signature] Date: 09/12/11
**DATA SHEET 3**

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

**Test Vehicle:** 2012 Blue Bird All American D3 RE School Bus  
**NHTSA No.:** CC0901  
**Test Lab:** MGA Research Corporation  
**Test Dates:** 09/12/11 – 10/26/11

**BARRIER NUMBER: B13/S13**

1. Measure the distance (X) from SRP of seat immediately aft of barrier in a horizontal longitudinal line forward to barrier. \( X = 528 \text{ mm} \).

<table>
<thead>
<tr>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Is distance ( X \leq 610 \text{ mm} )? (S5.2) Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
</tbody>
</table>

3. Measure distance \( U \) at inboard (i) and outboard (o) side of barrier.  
   \( U_i = 335 \text{ mm} \)  
   \( U_o = 347 \text{ mm} \)

4. Measure distance \( V \) at inboard (i) and outboard (o) sides of seat.  
   \( V_i = 473 \text{ mm} \)  
   \( V_o = 473 \text{ mm} \)

5. Is \( U_i \leq V_i \)? Yes – Pass; No – Fail  
   PASS

6. Is \( U_o \leq V_o \)? Yes – Pass; No – Fail  
   PASS

7. Maximum vertical height of the barrier above the SRP of the seat located immediately rearward of the barrier \( S = 640 \text{ mm} \)

8. Is item 7 \( > 610 \text{ mm} \)? (S5.2 & S5.1.2) Yes – Pass; No – Fail  
   PASS

9. Maximum transverse width of the seat cushion of the seat immediately rearward of the barrier \( W_1 = 990 \text{ mm} \)

10. Calculate the following:  
    \( 0.75 \times W_1 = 742.5 \text{ mm} \)

11. Calculate the following:  
    \( 0.9 \times W_1 \times 610 \text{ mm} = 543,510 \text{ mm}^2 \)
12. Project the front surface of the barrier onto a vertical transverse plane. Measure the projected surface area (± 2%) that falls between the following planes, which are determined relative to the seat located immediately rearward of the barrier:

- A horizontal plane that passes through the SRP and a horizontal plane 610 mm above the SRP; and
- A vertical longitudinal plane that passes through the inboard-most point of the seat cushion and a vertical longitudinal plane that passes through the outboard-most point of the seat cushion.

Use the following for a typical trapezoidal shape:

12.1 Seat back width at 610 mm above the SRP height (A) = 905 mm
12.2 Seat back width at the SRP height (B) = 967 mm
12.3 Area = ½ (A+B) x 610 mm = 570,960 mm²

Used this equation:

\[
\text{Area} = \frac{1}{2} (A+B) \times 610 \text{ mm} = 570,960 \text{ mm}^2 - * 2,880 \text{ mm}^2 = 568,080 \text{ mm}^2
\]

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.</td>
<td>Is item 12.1 &gt; item 10? (S5.1.2) Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
<tr>
<td>14.</td>
<td>Is item 12.3 &gt; item 11? (S5.1.2) Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
</tbody>
</table>

Note: For a seat back area that is not trapezoidal in shape or has a large radius at the corner(s), the above described measuring method (item 12.3) must be modified as required to obtain accurate area measurements.

Comments: * Denotes area of the trapezoid outside of radius.

Recorded By: [Signature]
Approved By: [Signature] Date: 09/12/11
DATA SHEET 3
RESTRAINING BARRIER POSITION AND PROJECTED REAR SURFACE AREA

Test Vehicle: 2012 Blue Bird All American D3 RE School Bus  
NHTSA No.: CC0901
Test Lab: MGA Research Corporation  
Test Dates: 09/12/11 – 10/26/11

BARRIER NUMBER: B16/S16

1. Measure the distance (X) from SRP of seat immediately aft of barrier in a horizontal longitudinal line forward to barrier. X = 486 mm.

2. Is distance X ≤ 610 mm? (S5.2) Yes – Pass; No – Fail  
   PASS

3. Measure distance U at inboard (i) and outboard (o) side of barrier. 
   Ui = 327 mm  
   Uo = 332 mm

4. Measure distance V at inboard (i) and outboard (o) sides of seat. 
   Vi = 473 mm  
   Vo = 473 mm

5. Is Ui ≤ Vi? Yes – Pass; No – Fail  
   PASS

6. Is Uo ≤ Vo? Yes – Pass; No – Fail  
   PASS

7. Maximum vertical height of the barrier above the SRP of the seat located immediately rearward of the barrier (S) = 636 mm

8. Is item 7 > 610 mm? (S5.2 & S5.1.2) Yes – Pass; No – Fail  
   PASS

9. Maximum transverse width of the seat cushion of the seat immediately rearward of the barrier (W1) = 750 mm

10. Calculate the following: Calculate the following: 0.75 x W1 = 562.5 mm

11. Calculate the following: 0.9 x W1 x 610 mm = 411,750 mm²
12. Project the front surface of the barrier onto a vertical transverse plane. Measure the projected surface area (+ 2%) that falls between the following planes, which are determined relative to the seat located immediately rearward of the barrier:

- A horizontal plane that passes through the SRP and a horizontal plane 610 mm above the SRP; and
- A vertical longitudinal plane that passes through the inboard-most point of the seat cushion and a vertical longitudinal plane that passes through the outboard-most point of the seat cushion.

Use the following for a typical trapezoidal shape:

12.1 Seat back width at 610 mm above the SRP height (A) = 676 mm
12.2 Seat back width at the SRP height (B) = 733 mm
12.3 Area = ½ (A+B) x 610 mm = 429,745 mm²

Used this equation:

\[ \text{Area} = \frac{1}{2} (A+B) \times 610 \text{ mm} = 429,745 \text{ mm}^2 - *2,700 \text{ mm}^2 = 427,045 \text{ mm}^2 \]

<table>
<thead>
<tr>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.</td>
<td>Is item 12.1 &gt; item 10? (S5.1.2) Yes – Pass; No – Fail</td>
</tr>
<tr>
<td>14.</td>
<td>Is item 12.3 &gt; item 11? (S5.1.2) Yes – Pass; No – Fail</td>
</tr>
</tbody>
</table>

Note: For a seat back area that is not trapezoidal in shape or has a large radius at the corner(s), the above described measuring method (item 12.3) must be modified as required to obtain accurate area measurements.

Comments: * Denotes area of the trapezoid outside of radius.
DATA SHEET 3
RESTRAINING BARRIER POSITION AND PROJECTED REAR SURFACE AREA

Test Vehicle: 2012 Blue Bird All American D3 RE School Bus  NHTSA No.: CC0901
Test Lab: MGA Research Corporation  Test Dates: 09/12/11 – 10/26/11

BARRIER NUMBER: B18/S18

1. Measure the distance (X) from SRP of seat immediately aft of barrier in a horizontal longitudinal line forward to barrier. X = 514 mm.

<table>
<thead>
<tr>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Is distance X ≤ 610 mm? (S5.2) Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
</tbody>
</table>

3. Measure distance U at inboard (i) and outboard (o) side of barrier.
   \[ U_i = 333 \text{ mm} \quad U_o = 345 \text{ mm} \]

4. Measure distance V at inboard (i) and outboard (o) sides of seat.
   \[ V_i = 473 \text{ mm} \quad V_o = 473 \text{ mm} \]

<table>
<thead>
<tr>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Is ( U_i \leq V_i )? Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
<tr>
<td>6. Is ( U_o \leq V_o )? Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
</tbody>
</table>

7. Maximum vertical height of the barrier above the SRP of the seat located immediately rearward of the barrier (S) = 639 mm

<table>
<thead>
<tr>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. Is item 7 &gt; 610 mm? (S5.2 &amp; S5.1.2) Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
</tbody>
</table>

9. Maximum transverse width of the seat cushion of the seat immediately rearward of the barrier (W1) = 990 mm

10. Calculate the following: \[ 0.75 \times W1 = 742.5 \text{ mm} \]

11. Calculate the following: \[ 0.9 \times W1 \times 610 \text{ mm} = 543,510 \text{ mm}^2 \]
12. Project the front surface of the barrier onto a vertical transverse plane. Measure the projected surface area (± 2%) that falls between the following planes, which are determined relative to the seat located immediately rearward of the barrier:

- A horizontal plane that passes through the SRP and a horizontal plane 610 mm above the SRP; and
- A vertical longitudinal plane that passes through the inboard-most point of the seat cushion and a vertical longitudinal plane that passes through the outboard-most point of the seat cushion.

Use the following for a typical trapezoidal shape:

12.1 Seat back width at 610 mm above the SRP height (A) = 910 mm
12.2 Seat back width at the SRP height (B) = 968 mm
12.3 Area = \( \frac{1}{2} (A+B) \times 610 \text{ mm} = 572,790 \text{ mm}^2 \)

Used this equation:

\[
\text{Area} = \frac{1}{2} (A+B) \times 610 \text{ mm} = 572,790 \text{ mm}^2 - * 1,944 \text{ mm}^2 = 570,846 \text{ mm}^2
\]

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.</td>
<td>Is item 12.1 &gt; item 10? (S5.1.2) Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
<tr>
<td>14.</td>
<td>Is item 12.3 &gt; item 11? (S5.1.2) Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
</tbody>
</table>

Note: For a seat back area that is not trapezoidal in shape or has a large radius at the corner(s), the above described measuring method (item 12.3) must be modified as required to obtain accurate area measurements.

Comments: * Denotes area of the trapezoid outside of radius.

Recorded By: [Signature]

Approved By: [Signature] Date: 09/12/11
DATA SHEET 4
SEAT CUSHION LATCHING AND RETENTION TEST

Test Vehicle: 2012 Blue Bird All American D3 RE School Bus  
NHTSA No.: CC0901
Test Lab: MGA Research Corporation  
Test Dates: 09/12/11 – 10/26/11

SEAT NUMBER: S17

1. Cushion Weight = 52.5 N; 11.8 lb; 5.4 kg
2. Cushion Weight x 5 = F = 262.5 N (S5.1.5 (b))
3. Complete the following force/time graph:

<table>
<thead>
<tr>
<th>TIME, SECONDS</th>
<th>FORCE N</th>
</tr>
</thead>
<tbody>
<tr>
<td>t1 = 4 sec.</td>
<td></td>
</tr>
<tr>
<td>t2 = 11 sec.</td>
<td></td>
</tr>
</tbody>
</table>

   Applied F = 271.8 N

   F must be 5 x Cushion Weight; t1 and t2 must be according to the following expressions:
   1 sec. < t1 < 5 sec. (+1.0 sec. and -0.0 sec.)
   t2 = t1 + 5sec. (+1.0 sec. and -0.0 sec.)

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

Describe Seat Cushion Attachments: The front and rear of the seat cushion is attached to the seat frame with metal brackets and screws.

Comments: None

Recorded By: 
Approved By:  
Date: 10/19/11
DATA SHEET 5
SEAT BACK FORCE DEFLECTION TEST - FORWARD

Test Vehicle: 2012 Blue Bird All American D3 RE School Bus  NHTSA No.: CC0901
Test Lab: MGA Research Corporation  Test Dates: 09/12/11 – 10/26/11

SEAT NUMBER: S1
1. Seat Bench Width = 990 mm
   \( W = \frac{\text{Seat Bench Width}}{381 \text{ mm}} \) (round to nearest whole number) = (3)
2. Seat Reference Point (SRP) location is: (Description of location as supplied by the
   COTR): 473 mm Above Floor, 0 mm from center
3. 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 = 864 mm
   Seat Back width at SRP = 970 mm
   (Loading Bar Length = Seat Back Width – 102 mm, +13, -6.3)
4. Include x-y plot of Force vs. Time for the lower loading bar.
5. Deflection of the seat back at conclusion of lower bar loading (1,557W position) =
   60 mm.
6. 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)
7. Seat back movement rate selected by the test engineer = 12.7 mm/sec
8. Location of upper loading bar is in a horizontal plane 406 mm above the SRP.
   (Requirement: 406 mm) (S5.1.3.3).
   Upper Loading Bar Length = 800 mm
   Seat back width at 406 mm above the SRP height = 901 mm
   (Loading Bar Length = Seat Back Width – 102 mm, +13, -6.3)
9. Reason for stopping seat back deflection:
   ____ Reached deflection determined in Item 5 above (if less than 356 mm)
   **X** Reached 356 mm maximum allowed deflection (Actual deflection was 357 mm)
   ____ Force exceeded 10,676 N
   ____ Separation was about to occur
10. Include the x-y plot of force vs. deflection for the upper loading bar with boundaries
    of Figure 14 (OVSC TP-222) superimposed.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.</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><strong>PASS</strong></td>
</tr>
</tbody>
</table>
### DATA SHEET 5 (CONTINUED)

**SEAT BACK FORCE DEFLECTION TEST – FORWARD**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.</td>
<td>Does the forward force vs. deflection trace of the seat back lie within the unshaded area? (S5.1.3) Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
</tbody>
</table>

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

14. The area within the force vs. deflection curve = 1,707 Joules (N-m)

15. $452W = 1,356$ Joules (N-m) (S5.1.3.4)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.</td>
<td>Is item 14 &gt; item 15? (S5.1.3.4) Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
</tbody>
</table>

Comments: None

Recorded By: 

Approved By: 

Date: 09/14/11
DATA SHEET 5
SEAT BACK FORCE DEFLECTION TEST - FORWARD

Test Vehicle: 2012 Blue Bird All American D3 RE School Bus  NHTSA No.: CC0901
Test Lab: MGA Research Corporation  Test Dates: 09/12/11 – 10/26/11

SEAT NUMBER: S6

1. Seat Bench Width = 990 mm
   \[ W = \left( \frac{\text{Seat Bench Width}}{381} \right) \text{ mm (round to nearest whole number)} = (3) \]

2. Seat Reference Point (SRP) location is: (Description of location as supplied by the COTR): 473 mm Above Floor, 0 mm from center

3. 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 = 864 mm
   Seat Back width at SRP = 970 mm
   (Loading Bar Length = Seat Back Width – 102 mm, +13, -6.3)

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

5. Deflection of the seat back at conclusion of lower bar loading (1,557W position) = 61 mm.

6. 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)

7. Seat back movement rate selected by the test engineer = 12.7 mm/sec

8. Location of upper loading bar is in a horizontal plane 406 mm above the SRP.
   (Requirement: 406 mm) (S5.1.3.3).
   Upper Loading Bar Length = 825 mm
   Seat back width at 406 mm above the SRP height = 930 mm
   (Loading Bar Length = Seat Back Width – 102 mm, +13, -6.3)

9. Reason for stopping seat back deflection:
   ___ Reached deflection determined in Item 5 above (if less than 356 mm)
   X  Reached 356 mm maximum allowed deflection (Actual deflection was 357 mm)
   ___ Force exceeded 10,676 N
   ___ Separation was about to occur

10. Include the x-y plot of force vs. deflection for the upper loading bar with boundaries of Figure 14 (OVSC TP-222) superimposed.

<table>
<thead>
<tr>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.</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>
</tbody>
</table>
## SEAT BACK FORCE DEFLECTION TEST – FORWARD

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.</td>
<td>Does the forward force vs. deflection trace of the seat back lie within the unshaded area? (S5.1.3) Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
<tr>
<td>13.</td>
<td>Include a deflection vs. time plot for the upper loading bar.</td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>The area within the force vs. deflection curve = 1,800 Joules (N-m)</td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>452W = 1,356 Joules (N-m) (S5.1.3.4)</td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>Is item 14 &gt; item 15? (S5.1.3.4) Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
</tbody>
</table>

Comments: None

Recorded By: [Signature]

Approved By: [Signature]  Date: 09/14/11
DATA SHEET 5
SEAT BACK FORCE DEFLECTION TEST - FORWARD

Test Vehicle: 2012 Blue Bird All American D3 RE School Bus  
NHTSA No.: CC0901
Test Lab: MGA Research Corporation  
Test Dates: 09/12/11 – 10/26/11

SEAT NUMBER: S16

1. Seat Bench Width = 750 mm  
   \[ W = \frac{\text{Seat Bench Width}}{381\, \text{mm}} \text{ (round to nearest whole number)} = (2) \]

2. Seat Reference Point (SRP) location is: (Description of location as supplied by the COTR): 473 mm Above Floor, 0 mm from center

3. 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 = 635 mm  
   Seat Back width at SRP = 732 mm  
   (Loading Bar Length = Seat Back Width – 102 mm, +13, -6.3)

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

5. Deflection of the seat back at conclusion of lower bar loading (1,557W position) = 44 mm.

6. 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)

7. Seat back movement rate selected by the test engineer = 12.7 mm/sec

8. Location of upper loading bar is in a horizontal plane 406 mm above the SRP.  
   (Requirement: 406 mm) (S5.1.3.3).  
   Upper Loading Bar Length = 610 mm  
   Seat back width at 406 mm above the SRP height = 710 mm  
   (Loading Bar Length = Seat Back Width – 102 mm, +13, -6.3)

9. Reason for stopping seat back deflection:  
   ___ Reached deflection determined in Item 5 above (if less than 356 mm)  
   X. Reached 356 mm maximum allowed deflection (Actual deflection was 357 mm)  
   ___ Force exceeded 10,676 N  
   ___ Separation was about to occur

10. Include the x-y plot of force vs. deflection for the upper loading bar with boundaries of Figure 14 (OVSC TP-222) superimposed.

11. Is the seat in its final deflected position within 102 mm of the next seat or barrier? Yes – Fail; No – Pass  
    **PASS**
DATA SHEET 5 (CONTINUED)
SEAT BACK FORCE DEFLECTION TEST – FORWARD

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.</td>
<td>Does the forward force vs. deflection trace of the seat back lie within the unshaded area? (S5.1.3) Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
<tr>
<td>13.</td>
<td>Include a deflection vs. time plot for the upper loading bar.</td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>The area within the force vs. deflection curve = 1,679 Joules (N-m)</td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>452W = 904 Joules (N-m) (S5.1.3.4)</td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>Is item 14 &gt; item 15? (S5.1.3.4) Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
</tbody>
</table>

Comments: None

Recorded By: [Signature]

Approved By: [Signature]  Date: 10/25/11
DATA SHEET 6
RESTRAINING BARRIER FORCE/DEFLECTION TEST

Test Vehicle: 2012 Blue Bird All American D3 RE School Bus  NHTSA No.: CC0901
Test Lab: MGA Research Corporation  Test Dates: 09/12/11 – 10/26/11

BARRIER NUMBER: B1

1. Seat cushion width of seat immediately rearward of restraining barrier = 990 mm
   \[ W = \frac{\text{Seat Cushion Width}}{381} \text{ mm (round to nearest whole number)} = (3) \]

2. Location of SRP of seat rearward of restraining barrier is: (Description of location as supplied by the manufacturer): 473 mm Above Floor.

3. Location of lower loading bar is 0 mm above/below the SRP.
   (Requirement: between 102 mm above and 102 mm below the SRP) (S5.1.3.1)
   Length of loading bar = 864 mm
   Width of barrier at SRP = 970 mm
   (Loading Bar Length = Seat Back Width – 102 mm, +13, -6.3)

4. Include the x-y plot of force vs. time for the lower loading bar.

5. Deflection of the barrier at the conclusion of lower bar loading (1,557W position) = 51 mm.

6. Maximum deflection allowed without moving the restraining barrier to within interference of door operation = 356 mm (must be 356 mm or less).

7. Barrier movement rate selected by the test engineer = 12.7 mm/sec

8. Location of upper loading bar is in a horizontal plane 406 mm above the SRP.
   (Requirement: 406 mm) (S5.1.3.3)
   Upper loading bar length = 825 mm
   Barrier width at 406 mm above the SRP height = 925 mm
   (Loading Bar Length = Seat Back Width – 102 mm, +13, -6.3)

9. Reason for stopping restraining barrier deflection:
   \[ \text{X} \] Reached 356 mm maximum
   \[ \_ \_ \] Force exceeded 10,676 N
   \[ \_ \_ \] Separation was about to occur
   \[ \_ \_ \] Interference with door operation

10. Maximum deflection of barrier 357 mm.
    (Requirement: maximum allowed is 356 mm) (S5.2.3 (b))

11. Does the restraining barrier interfere with the normal operation of the door? (S5.2.3 (c)) Yes – Fail; No – Pass
    \[ \text{PASS} \]
### DATA SHEET 6 (CONTINUED)
#### RESTRAINING BARRIER FORCE/DEFLECTION TEST

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Pass/Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.</td>
<td>Did any separation of barrier component or the separation of the barrier from the vehicle occur? (S5.1.3 (d) &amp; (e)) Yes – Fail; No – Pass</td>
<td>PASS</td>
</tr>
<tr>
<td>13.</td>
<td>Include the x-y plot of force vs. deflection for the upper loading bar with boundaries of Figure 14 (OVSC TP-222) superimposed.</td>
<td>PASS</td>
</tr>
<tr>
<td>14.</td>
<td>Does the forward force vs. deflection trace of the barrier back lie within the unshaded area? (S5.2.3(a)) Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
<tr>
<td>15.</td>
<td>Include a deflection vs. time plot for the upper loading bar.</td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>The area within the force vs. deflection curve = 1,852 Joules (N-m)</td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>452W = 1,356 Joules (N-m) (S5.2.3) (S5.1.3.4)</td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>Is item 16 &gt; item 17? Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
</tbody>
</table>

Comments: None.

Recorded By: [Signature]

Approved By: [Signature] Date: 10/25/11
BARRIER NUMBER: B13

1. Seat cushion width of seat immediately rearward of restraining barrier = 990 mm
   \[ W = \frac{\text{Seat Cushion Width}}{381 \text{ mm}} \text{ (round to nearest whole number)} = (3) \]

2. Location of SRP of seat rearward of restraining barrier is: (Description of location as supplied by the manufacturer): 473 mm Above Floor.

3. Location of lower loading bar is 0 mm above/below the SRP.
   (Requirement: between 102 mm above and 102 mm below the SRP) (S5.1.3.1)
   Length of loading bar = 864 mm
   Width of barrier at SRP = 970 mm
   (Loading Bar Length = Seat Back Width – 102 mm, +13, -6.3)

4. Include the x-y plot of force vs. time for the lower loading bar.

5. Deflection of the barrier at the conclusion of lower bar loading (1,557W position) = 57 mm.

6. Maximum deflection allowed without moving the restraining barrier to within interference of door operation = 299 mm (must be 356 mm or less).

7. Barrier movement rate selected by the test engineer = 12.7 mm/sec

8. Location of upper loading bar is in a horizontal plane 406 mm above the SRP.
   (Requirement: 406 mm) (S5.1.3.3)
   Upper loading bar length = 825 mm
   Barrier width at 406 mm above the SRP height = 930 mm
   (Loading Bar Length = Seat Back Width – 102 mm, +13, -6.3)

9. Reason for stopping restraining barrier deflection:
   
   ___ Reached 356 mm maximum

   ___ Force exceeded 10,676 N

   ___ Separation was about to occur

   ___ Interference with door operation

10. Maximum deflection of barrier 299 mm.
    (Requirement: maximum allowed is 356 mm) (S5.2.3 (b))

11. Does the restraining barrier interfere with the normal operation of the door? (S5.2.3 (c)) Yes – Fail; No – Pass
    
    **PASS**
**DATA SHEET 6 (CONTINUED)**

**RESTRANING BARRIER FORCE/DEFLECTION TEST**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.</td>
<td>Did any separation of barrier component or the separation of the barrier from the vehicle occur? (S5.1.3 (d) &amp; (e))</td>
<td>Yes – Fail; No – Pass</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>PASS</strong></td>
</tr>
</tbody>
</table>

13. Include the x-y plot of force vs. deflection for the upper loading bar with boundaries of Figure 14 (OVSC TP-222) superimposed.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.</td>
<td>Does the forward force vs. deflection trace of the barrier back lie within the unshaded area? (S5.2.3(a))</td>
<td>Yes – Pass; No – Fail</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>FAIL</strong></td>
</tr>
</tbody>
</table>

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

16. The area within the force vs. deflection curve = 1,353 Joules (N-m)

17. 452W = 1,356 Joules (N-m) (S5.2.3) (S5.1.3.4)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.</td>
<td>Is item 16 &gt; item 17?</td>
<td>Yes – Pass; No – Fail</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>FAIL</strong></td>
</tr>
</tbody>
</table>

Comments: None.

Recorded By: [Signature]

Approved By: [Signature] Date: 09/13/11
DATA SHEET 6
RESTRAINING BARRIER FORCE/DEFLECTION TEST

Test Vehicle: 2012 Blue Bird All American D3 RE School Bus  NHTSA No.: CC0901
Test Lab: MGA Research Corporation  Test Dates: 09/12/11 – 10/26/11

BARRIER NUMBER: B16

1. Seat cushion width of seat immediately rearward of restraining barrier = 750 mm
   \[ W = \frac{(\text{Seat Cushion Width})}{381} \text{ mm (round to nearest whole number)} = (2) \]

2. Location of SRP of seat rearward of restraining barrier is: (Description of location as
   supplied by the manufacturer): 473 mm Above Floor.

3. Location of lower loading bar is 0 mm above/below the SRP.
   (Requirement: between 102 mm above and 102 mm below the SRP) (S5.1.3.1)
   Length of loading bar = 635 mm
   Width of barrier at SRP = 732 mm
   (Loading Bar Length = Seat Back Width – 102 mm, +13, -6.3)

4. Include the x-y plot of force vs. time for the lower loading bar.

5. Deflection of the barrier at the conclusion of lower bar loading (1,557W position) = 53 mm.

6. Maximum deflection allowed without moving the restraining barrier to within
   interference of door operation = 356 mm (must be 356 mm or less).

7. Barrier movement rate selected by the test engineer = 12.7 mm/sec

8. Location of upper loading bar is in a horizontal plane 406 mm above the SRP.
   (Requirement: 406 mm) (S5.1.3.3)
   Upper loading bar length = 610 mm
   Barrier width at 406 mm above the SRP height = 710 mm
   (Loading Bar Length = Seat Back Width – 102 mm, +13, -6.3)

9. Reason for stopping restraining barrier deflection:
   X  Reached 356 mm maximum
   ___ Force exceeded 10,676 N
   ___ Separation was about to occur
   ___ Interference with door operation

10. Maximum deflection of barrier 357 mm.
    (Requirement: maximum allowed is 356 mm) (S5.2.3 (b))

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>11.</strong> Does the restraining barrier interfere with the normal operation of the door? (S5.2.3 (c)) Yes – Fail; No – Pass</td>
<td><strong>PASS</strong></td>
</tr>
</tbody>
</table>

**PASS/FAIL**
### RESTRAINING BARRIER FORCE/DEFLECTION TEST

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>PASS/FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.</td>
<td>Did any separation of barrier component or the separation of the barrier from the vehicle occur? <em>(S5.1.3 (d) &amp; (e))</em> Yes – Fail; No – Pass</td>
<td>PASS</td>
</tr>
<tr>
<td>13.</td>
<td>Include the x-y plot of force vs. deflection for the upper loading bar with boundaries of Figure 14 (OVSC TP-222) superimposed.</td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Does the forward force vs. deflection trace of the barrier back lie within the unshaded area? <em>(S5.2.3(a))</em> Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
<tr>
<td>15.</td>
<td>Include a deflection vs. time plot for the upper loading bar.</td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>The area within the force vs. deflection curve = 1,330 Joules (N-m)</td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>452W = 904 Joules (N-m) <em>(S5.2.3) (S5.1.3.4)</em></td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>Is item 16 &gt; item 17? Yes – Pass; No – Fail</td>
<td>PASS</td>
</tr>
</tbody>
</table>

Comments: The displacement transducer was not offset to zero prior to load application denoted by the upper curve line appearing below the red lower boundary line. However, the arch under the force vs. deflection curve satisfies the minimum energy requirement of the barrier. Therefore, the test is considered valid and the barrier compliant.

Recorded By: [Signature]

Approved By: [Signature] Date: 10/24/11
DATA SHEET 7
SEAT BACK FORCE DEFLECTION TEST – REARWARD

Test Vehicle: 2012 Blue Bird All American D3 RE School Bus  NHTSA No.: CC0901
Test Lab: MGA Research Corporation  Test Dates: 09/12/11 – 10/26/11

SEAT NUMBER: S8

1. Seat bench width = 990 mm
   \[ W = \frac{\text{Seat Cushion Width}}{381} \text{ mm (round to nearest whole number)} = (3) \]

2. Location of the loading bar is in a horizontal plane 343 mm above the SRP of the test seat. (Requirement: 343 mm above SRP) (S5.1.4.1)
   Loading bar length = 825 mm
   Seat back width at 343 mm above the SRP height = 920 mm
   (Loading Bar Length = Seat Back Width – 102 mm, +13, -6.3)

3. Deflection of the seat back at 222 N preload = 27.9 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 = 8.8 mm/sec

6. Reason for stopping deflection:
   ___ Reached deflection determined in item 3 above
   __X__ Reached 254 mm maximum allowed deflection
   ___ Force exceeded 9,786 N
   ___ Separation was about to occur

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

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

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

10. 316W = 948 Joules (N-m)

11. The area within the force vs. deflection curve = 1,143 Joules (N-m)

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

Comments: None.

Recorded By: [Signature]
Approved By: [Signature]  Date: 09/14/11
DATA SHEET 7
SEAT BACK FORCE DEFLECTION TEST – REARWARD

Test Vehicle: 2012 Blue Bird All American D3 RE School Bus  NHTSA No.: CC0901
Test Lab: MGA Research Corporation  Test Dates: 09/12/11 – 10/26/11

SEAT NUMBER: S11

1. Seat bench width = 990 mm
   \[
   W = \text{(Seat Cushion Width)}/381 \text{ mm (round to nearest whole number)} = (3)
   \]

2. Location of the loading bar is in a horizontal plane 343 mm above the SRP of the test seat. (Requirement: 343 mm above SRP) (S5.1.4.1)
   Loading bar length = 825 mm
   Seat back width at 343 mm above the SRP height = 920 mm
   \[
   \text{(Loading Bar Length) = Seat Back Width – 102 mm, +13, -6.3)
   \]

3. Deflection of the seat back at 222 N preload = 31 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 = 8.8 mm/sec

6. Reason for stopping deflection:
   ___ Reached deflection determined in item 3 above
   ___ Reached 254 mm maximum allowed deflection
   ___ Force exceeded 9,786 N
   ___ Separation was about to occur

7. Include the x-y plot of force vs. deflection for the loading bar with the boundaries of Figure 18 (OVSC TP-222) 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) Yes – Pass; No – Fail</td>
</tr>
</tbody>
</table>

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

10. 316W = 948 Joules (N-m)

11. The area within the force vs. deflection curve = 1,092 Joules (N-m)

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

Comments: None.

Recorded By:  
Approved By: Michael Jankov  Date: 09/14/11
REAR SURFACE

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 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
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</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-</th>
<th>No-</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>Y</td>
<td>Angle</td>
<td></td>
<td></td>
<td>PASS</td>
<td>FAIL</td>
</tr>
<tr>
<td>H1</td>
<td>-754</td>
<td>520</td>
<td>0º</td>
<td>1.54</td>
<td>1.57</td>
<td>5,820</td>
<td>PASS</td>
</tr>
<tr>
<td>H2</td>
<td>-653</td>
<td>521</td>
<td>0º</td>
<td>1.53</td>
<td>1.94</td>
<td>6,420</td>
<td>PASS</td>
</tr>
<tr>
<td>H3</td>
<td>-551</td>
<td>520</td>
<td>0º</td>
<td>1.53</td>
<td>1.17</td>
<td>5,490</td>
<td>PASS</td>
</tr>
<tr>
<td>H4</td>
<td>-705</td>
<td>420</td>
<td>0º</td>
<td>1.58</td>
<td>2.07</td>
<td>6,220</td>
<td>PASS</td>
</tr>
<tr>
<td>H5</td>
<td>-600</td>
<td>420</td>
<td>0º</td>
<td>1.57</td>
<td>2.06</td>
<td>5,280</td>
<td>PASS</td>
</tr>
<tr>
<td>H6</td>
<td>-727</td>
<td>321</td>
<td>0º</td>
<td>1.58</td>
<td>1.44</td>
<td>5,280</td>
<td>PASS</td>
</tr>
<tr>
<td>H7</td>
<td>-620</td>
<td>320</td>
<td>0º</td>
<td>1.59</td>
<td>1.62</td>
<td>5,550</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: 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. In the case of Seat No. S2, the inboard edge of the seat is on the right hand side of the seat as viewed from the rear.

Recorded By: [Signature]
Approved By: [Signature] Date: 09/27/11
DATA SHEET 8
HEAD FORM IMPACT CONTACT AREA REQUIREMENT

Test Vehicle: 2012 Blue Bird All American D3 RE School Bus  NHTSA No.: CC0901
Test Lab: MGA Research Corporation  Test Dates: 09/12/11 – 10/26/11

SEAT NUMBER: S7

REAR SURFACE

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 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
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>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>-777</td>
<td>507</td>
<td>0º</td>
<td>1.57</td>
<td>1.59</td>
<td>6,480</td>
<td>PASS</td>
</tr>
<tr>
<td>H2</td>
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<td>510</td>
<td>0º</td>
<td>1.52</td>
<td>1.65</td>
<td>5,610</td>
<td>PASS</td>
</tr>
<tr>
<td>H3</td>
<td>-575</td>
<td>510</td>
<td>0º</td>
<td>1.53</td>
<td>1.88</td>
<td>5,530</td>
<td>PASS</td>
</tr>
<tr>
<td>H4</td>
<td>-736</td>
<td>410</td>
<td>0º</td>
<td>1.58</td>
<td>2.07</td>
<td>6,380</td>
<td>PASS</td>
</tr>
<tr>
<td>H5</td>
<td>-635</td>
<td>410</td>
<td>0º</td>
<td>1.55</td>
<td>1.43</td>
<td>5,300</td>
<td>PASS</td>
</tr>
<tr>
<td>H6</td>
<td>-534</td>
<td>411</td>
<td>0º</td>
<td>1.58</td>
<td>1.59</td>
<td>4,930</td>
<td>PASS</td>
</tr>
<tr>
<td>H7</td>
<td>-779</td>
<td>312</td>
<td>0º</td>
<td>1.54</td>
<td>1.26</td>
<td>5,580</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: 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: 10/12/11
DATA SHEET 8
HEAD FORM IMPACT CONTACT AREA REQUIREMENT

Test Vehicle: 2012 Blue Bird All American D3 RE School Bus  NHTSA No.: CC0901
Test Lab: MGA Research Corporation  Test Dates: 09/12/11 – 10/26/11

SEAT NUMBER: S15

REAR SURFACE

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 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</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>H1</td>
<td>499 511 0º</td>
<td>1.56</td>
<td>1.76</td>
<td>5,500</td>
<td>Yes- PASS</td>
<td>No- FAIL</td>
<td></td>
</tr>
<tr>
<td>H2</td>
<td>600 510 0º</td>
<td>1.56</td>
<td>1.92</td>
<td>4,660</td>
<td>Yes- PASS</td>
<td>No- FAIL</td>
<td></td>
</tr>
<tr>
<td>H3</td>
<td>437 416 0º</td>
<td>1.52</td>
<td>1.13</td>
<td>4,450</td>
<td>Yes- PASS</td>
<td>No- FAIL</td>
<td></td>
</tr>
<tr>
<td>H4</td>
<td>540 415 0º</td>
<td>1.52</td>
<td>1.26</td>
<td>5,000</td>
<td>Yes- PASS</td>
<td>No- FAIL</td>
<td></td>
</tr>
<tr>
<td>H5</td>
<td>385 320 0º</td>
<td>1.60</td>
<td>1.04</td>
<td>4,400</td>
<td>Yes- PASS</td>
<td>No- FAIL</td>
<td></td>
</tr>
<tr>
<td>H6</td>
<td>489 320 0º</td>
<td>1.57</td>
<td>1.52</td>
<td>4,720</td>
<td>Yes- PASS</td>
<td>No- FAIL</td>
<td></td>
</tr>
<tr>
<td>H7</td>
<td>590 320 0º</td>
<td>1.53</td>
<td>1.88</td>
<td>5,170</td>
<td>Yes- PASS</td>
<td>No- FAIL</td>
<td></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: 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: 10/19/11
DATA SHEET 8
HEAD FORM IMPACT CONTACT AREA REQUIREMENT

Test Vehicle: 2012 Blue Bird All American D3 RE School Bus  NHTSA No.: CC0901
Test Lab: MGA Research Corporation  Test Dates: 09/12/11 – 10/26/11

BARRIER NUMBER: B6

REAR SURFACE

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 the plane of reference for head form impact angle:
0° = Parallel with Floor, (+) is Up, (-) is Down
X = From Inboard Edge of Barrier
Y = Measured Vertically from the SRP
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>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>-816</td>
<td>512</td>
<td>0º</td>
<td>1.59</td>
<td>1.44</td>
<td>6,560</td>
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<tr>
<td>H2</td>
<td>-716</td>
<td>516</td>
<td>0º</td>
<td>1.60</td>
<td>1.68</td>
<td>5,340</td>
<td>PASS</td>
</tr>
<tr>
<td>H3</td>
<td>-612</td>
<td>522</td>
<td>0º</td>
<td>1.60</td>
<td>1.91</td>
<td>5,330</td>
<td>PASS</td>
</tr>
<tr>
<td>H4</td>
<td>-801</td>
<td>412</td>
<td>0º</td>
<td>1.57</td>
<td>1.32</td>
<td>5,260</td>
<td>PASS</td>
</tr>
<tr>
<td>H5</td>
<td>-699</td>
<td>415</td>
<td>0º</td>
<td>1.54</td>
<td>1.39</td>
<td>4,730</td>
<td>PASS</td>
</tr>
<tr>
<td>H6</td>
<td>-725</td>
<td>309</td>
<td>0º</td>
<td>1.52</td>
<td>1.43</td>
<td>5,110</td>
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<tr>
<td>H7</td>
<td>-623</td>
<td>315</td>
<td>0º</td>
<td>1.53</td>
<td>1.38</td>
<td>4,230</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: 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.

Recorded By: ____________________

Approved By: ____________________  Date: 09/20/11
DATA SHEET 8
HEAD FORM IMPACT CONTACT AREA REQUIREMENT

Test Vehicle:  2012 Blue Bird All American D3 RE School Bus  NHTSA No.:  CC0901
Test Lab:    MGA Research Corporation  Test Dates:  09/12/11 – 10/26/11

BARRIER NUMBER:  B18

REAR SURFACE

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 the plane of reference for head form impact angle:
   0° = Parallel with Floor, (+) is Up, (-) is Down
   X = From Inboard Edge of Barrier
   Y = Measured Vertically from the SRP
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>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>450</td>
<td>520</td>
<td>0º</td>
<td>1.60</td>
<td>1.29</td>
<td>5,230</td>
<td>PASS</td>
</tr>
<tr>
<td>H2</td>
<td>551</td>
<td>520</td>
<td>0º</td>
<td>1.56</td>
<td>2.15</td>
<td>4,530</td>
<td>PASS</td>
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<tr>
<td>H3</td>
<td>656</td>
<td>520</td>
<td>0º</td>
<td>1.55</td>
<td>2.16</td>
<td>4,540</td>
<td>PASS</td>
</tr>
<tr>
<td>H4</td>
<td>489</td>
<td>420</td>
<td>0º</td>
<td>1.60</td>
<td>1.80</td>
<td>4,860</td>
<td>PASS</td>
</tr>
<tr>
<td>H5</td>
<td>590</td>
<td>420</td>
<td>0º</td>
<td>1.58</td>
<td>1.79</td>
<td>4,760</td>
<td>PASS</td>
</tr>
<tr>
<td>H6</td>
<td>522</td>
<td>321</td>
<td>0º</td>
<td>1.60</td>
<td>1.38</td>
<td>4,770</td>
<td>PASS</td>
</tr>
<tr>
<td>H7</td>
<td>625</td>
<td>321</td>
<td>0º</td>
<td>1.57</td>
<td>2.00</td>
<td>4,340</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: 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.

Recorded By: [Signature]

Approved By: [Signature] Date: 10/20/11
REAR SURFACE

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, H11, H12, H13, and H14 in the appropriate location.
3. Define 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 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>
<th>Yes- PASS</th>
<th>No- FAIL</th>
<th>Yes- PASS</th>
<th>No- FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>H8</td>
<td>X -349</td>
<td>Y 520</td>
<td>Angle 0º</td>
<td>6.64</td>
<td>6.72</td>
<td>212</td>
<td>7.30</td>
<td>PASS</td>
<td>PASS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H9</td>
<td>X -246</td>
<td>Y 520</td>
<td>Angle 0º</td>
<td>6.66</td>
<td>6.69</td>
<td>220</td>
<td>7.16</td>
<td>PASS</td>
<td>PASS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H10</td>
<td>X -145</td>
<td>Y 520</td>
<td>Angle 0º</td>
<td>6.65</td>
<td>6.62</td>
<td>297</td>
<td>6.68</td>
<td>PASS</td>
<td>PASS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H11</td>
<td>X -296</td>
<td>Y 420</td>
<td>Angle 0º</td>
<td>6.68</td>
<td>6.72</td>
<td>164</td>
<td>10.30</td>
<td>PASS</td>
<td>PASS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H12</td>
<td>X -196</td>
<td>Y 420</td>
<td>Angle 0º</td>
<td>6.66</td>
<td>6.65</td>
<td>157</td>
<td>9.92</td>
<td>PASS</td>
<td>PASS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H13</td>
<td>X -270</td>
<td>Y 320</td>
<td>Angle 0º</td>
<td>6.69</td>
<td>7.32</td>
<td>233</td>
<td>14.02</td>
<td>PASS</td>
<td>PASS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H14</td>
<td>X -169</td>
<td>Y 320</td>
<td>Angle 0º</td>
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<td>6.58</td>
<td>226</td>
<td>11.23</td>
<td>PASS</td>
<td>PASS</td>
<td></td>
<td></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: 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: 09/29/11
DATA SHEET 9
HEAD FORM IMPACT ENERGY REQUIREMENT

Test Vehicle: 2012 Blue Bird All American D3 RE School Bus  NHTSA No.: CC0901
Test Lab: MGA Research Corporation  Test Dates: 09/12/11 – 10/26/11

SEAT NUMBER: S7

REAR SURFACE

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, H11, H12, H13, and H14 in the appropriate location.
3. Define 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
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>X, Y, Angle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Yes-PASS</td>
<td>Yes-PASS</td>
</tr>
<tr>
<td>H8 -371 512 0º</td>
<td>6.63</td>
<td>6.75</td>
<td>151</td>
<td>7.08</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>H9 -270 512 0º</td>
<td>6.65</td>
<td>6.80</td>
<td>128</td>
<td>7.01</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>H10 -169 512 0º</td>
<td>6.63</td>
<td>6.77</td>
<td>131</td>
<td>6.56</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>H11 -329 415 0º</td>
<td>6.68</td>
<td>6.83</td>
<td>131</td>
<td>9.05</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>H12 -229 416 0º</td>
<td>6.66</td>
<td>6.72</td>
<td>149</td>
<td>7.35</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>H13 -272 322 0º</td>
<td>6.68</td>
<td>6.76</td>
<td>245</td>
<td>12.06</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>H14 -170 322 0º</td>
<td>6.69</td>
<td>6.81</td>
<td>210</td>
<td>9.94</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</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: 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:  

Approved By: Michael  
Date: 10/14/11
DATA SHEET 9
HEAD FORM IMPACT ENERGY REQUIREMENT

Test Vehicle: 2012 Blue Bird All American D3 RE School Bus  NHTSA No.: CC0901
Test Lab: MGA Research Corporation  Test Dates: 09/12/11 – 10/26/11

SEAT NUMBER: S15

REAR SURFACE

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, H11, H12, H13, and H14 in the appropriate location.

3. Define 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
## 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 194</td>
<td>Y 530</td>
<td>Angle: 0°</td>
<td>6.66</td>
<td>7.00</td>
<td>136</td>
<td>7.86 PASS</td>
</tr>
<tr>
<td>H9</td>
<td>X 296</td>
<td>Y 525</td>
<td>Angle: 0°</td>
<td>6.66</td>
<td>6.93</td>
<td>130</td>
<td>8.34 PASS</td>
</tr>
<tr>
<td>H10</td>
<td>X 230</td>
<td>Y 430</td>
<td>Angle: 0°</td>
<td>6.64</td>
<td>6.93</td>
<td>125</td>
<td>8.42 PASS</td>
</tr>
<tr>
<td>H11</td>
<td>X 333</td>
<td>Y 425</td>
<td>Angle: 0°</td>
<td>6.67</td>
<td>6.87</td>
<td>133</td>
<td>10.86 PASS</td>
</tr>
<tr>
<td>H12</td>
<td>X 399</td>
<td>Y 520</td>
<td>Angle: 0°</td>
<td>6.62</td>
<td>6.63</td>
<td>129</td>
<td>12.51 PASS</td>
</tr>
<tr>
<td>H13</td>
<td>X 182</td>
<td>Y 334</td>
<td>Angle: 0°</td>
<td>6.69</td>
<td>6.82</td>
<td>151</td>
<td>9.92 PASS</td>
</tr>
<tr>
<td>H14</td>
<td>X 283</td>
<td>Y 330</td>
<td>Angle: 0°</td>
<td>6.69</td>
<td>6.86</td>
<td>169</td>
<td>14.74 PASS</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: 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: 10/19/11
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, H11, H12, H13, H14, and H15 in the appropriate location.
3. Define the plane of reference for head form impact angle:
   $0^\circ$ = Parallel with Floor, (+) is Up, (-) is Down
   X = From Inboard Edge of Barrier
   Y = Measured Vertically from the SRP
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>
<th>Yes-PASS</th>
<th>No-FAIL</th>
<th>Yes-PASS</th>
<th>No-FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>H8</td>
<td>X: -410</td>
<td>Y: 520</td>
<td>Angle: 0º</td>
<td>6.66</td>
<td>6.77</td>
<td>191</td>
<td>7.70</td>
<td>PASS</td>
<td>PASS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H9</td>
<td>X: -310</td>
<td>Y: 520</td>
<td>Angle: 0º</td>
<td>6.66</td>
<td>6.70</td>
<td>155</td>
<td>7.53</td>
<td>PASS</td>
<td>PASS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H10</td>
<td>X: -208</td>
<td>Y: 520</td>
<td>Angle: 0º</td>
<td>6.69</td>
<td>6.74</td>
<td>101</td>
<td>7.60</td>
<td>PASS</td>
<td>PASS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H11</td>
<td>X: -265</td>
<td>Y: 419</td>
<td>Angle: 0º</td>
<td>6.66</td>
<td>6.79</td>
<td>178</td>
<td>9.41</td>
<td>PASS</td>
<td>PASS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H12</td>
<td>X: -163</td>
<td>Y: 420</td>
<td>Angle: 0º</td>
<td>6.69</td>
<td>6.71</td>
<td>126</td>
<td>7.79</td>
<td>PASS</td>
<td>PASS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H14</td>
<td>X: -116</td>
<td>Y: 319</td>
<td>Angle: 0º</td>
<td>6.65</td>
<td>6.64</td>
<td>221</td>
<td>8.62</td>
<td>PASS</td>
<td>PASS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H15</td>
<td>X: -320</td>
<td>Y: 319</td>
<td>Angle: 0º</td>
<td>6.67</td>
<td>6.66</td>
<td>204</td>
<td>6.75</td>
<td>PASS</td>
<td>PASS</td>
<td></td>
<td></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: 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.

Recorded By: [Signature]

Approved By: [Signature]  Date: 09/21/11
DATA SHEET 9
HEAD FORM IMPACT ENERGY REQUIREMENT

Test Vehicle: 2012 Blue Bird All American D3 RE School Bus
NHTSA No.: CC0901
Test Lab: MGA Research Corporation
Test Dates: 09/12/11 – 10/26/11

BARRIER NUMBER: B18

REAR SURFACE

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, H11, H12, H13, H14, and H15 in the appropriate location.

3. Define the plane of reference for head form impact angle:
   0° = Parallel with Floor, (+) is Up, (-) is Down
   X = From Inboard Edge of Barrier
   Y = Measured Vertically from the SRP
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>
<th>Yes-</th>
<th>No-</th>
<th>Yes-</th>
<th>No-</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>Y</td>
<td>Angle</td>
<td></td>
<td></td>
<td>Yes- PASS</td>
<td>No- FAIL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H8</td>
<td>141</td>
<td>530</td>
<td>0º</td>
<td>6.63</td>
<td>6.80</td>
<td>90</td>
<td>7.52</td>
<td>PASS</td>
<td>PASS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H9</td>
<td>242</td>
<td>530</td>
<td>0º</td>
<td>6.61</td>
<td>6.76</td>
<td>113</td>
<td>7.98</td>
<td>PASS</td>
<td>PASS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H10</td>
<td>344</td>
<td>525</td>
<td>0º</td>
<td>6.61</td>
<td>6.71</td>
<td>202</td>
<td>8.10</td>
<td>PASS</td>
<td>PASS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H11</td>
<td>180</td>
<td>429</td>
<td>0º</td>
<td>6.61</td>
<td>7.02</td>
<td>129</td>
<td>8.70</td>
<td>PASS</td>
<td>PASS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H12</td>
<td>281</td>
<td>427</td>
<td>0º</td>
<td>6.63</td>
<td>6.87</td>
<td>225</td>
<td>9.12</td>
<td>PASS</td>
<td>PASS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H13</td>
<td>118</td>
<td>332</td>
<td>0º</td>
<td>6.61</td>
<td>6.75</td>
<td>200</td>
<td>7.51</td>
<td>PASS</td>
<td>PASS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H14</td>
<td>219</td>
<td>330</td>
<td>0º</td>
<td>6.65</td>
<td>6.79</td>
<td>227</td>
<td>9.59</td>
<td>PASS</td>
<td>PASS</td>
<td></td>
<td></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: 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.

Recorded By: [Signature]

Approved By: [Signature] Date: 10/21/11
DATA SHEET 10
KNEE FORM IMPACT TEST

Test Vehicle: 2012 Blue Bird All American D3 RE School Bus  NHTSA No.: CC0901
Test Lab: MGA Research Corporation  Test Dates: 09/12/11 – 10/26/11

SEAT NUMBER: S2

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° = Parallel with Floor, (+) is Up, (-) is Down
   X = From Inboard Edge of the Barrier
   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</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>X</td>
<td>Y</td>
<td>Angle</td>
<td></td>
<td></td>
<td></td>
<td>Yes-</td>
<td>No-</td>
</tr>
<tr>
<td>----------</td>
<td>----------</td>
<td>-----------------</td>
<td>----------------</td>
<td>---------</td>
<td>-----------------</td>
<td>-----------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>K1</td>
<td>-424</td>
<td>240</td>
<td>0º</td>
<td>4.88</td>
<td>5.09</td>
<td>3,180</td>
<td>1,712</td>
</tr>
<tr>
<td>K2</td>
<td>-324</td>
<td>239</td>
<td>0º</td>
<td>4.89</td>
<td>5.12</td>
<td>3,390</td>
<td>1,767</td>
</tr>
<tr>
<td>K3</td>
<td>-223</td>
<td>238</td>
<td>0º</td>
<td>4.86</td>
<td>5.01</td>
<td>3,700</td>
<td>1,886</td>
</tr>
<tr>
<td>K4</td>
<td>-120</td>
<td>238</td>
<td>0º</td>
<td>4.89</td>
<td>4.93</td>
<td>4,100</td>
<td>2,200</td>
</tr>
<tr>
<td>K5</td>
<td>-376</td>
<td>129</td>
<td>0º</td>
<td>4.81</td>
<td>4.95</td>
<td></td>
<td>1,892</td>
</tr>
<tr>
<td>K6</td>
<td>-275</td>
<td>128</td>
<td>0º</td>
<td>4.81</td>
<td>4.96</td>
<td></td>
<td>2,100</td>
</tr>
<tr>
<td>K7</td>
<td>-174</td>
<td>129</td>
<td>0º</td>
<td>4.80</td>
<td>4.92</td>
<td></td>
<td>2,077</td>
</tr>
<tr>
<td>K8</td>
<td>-71</td>
<td>129</td>
<td>0º</td>
<td>4.80</td>
<td>4.92</td>
<td></td>
<td>2,483</td>
</tr>
</tbody>
</table>

* Impact velocity from item No. 7 below
** Impact velocity range = 4.86 mps, +0.076, -0 mps for contact area (K1 through K4)
** Impact velocity range = 4.86 mps, +0, -0.076 mps for contact area (K5 through K8)

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 plot K1 through K8.
8. Attach force vs. time plots for K5, K6, K7 and K8.

Comments: 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.

Recorded By: 

Approved By: Michael F. 

Date: 09/28/11
DATA SHEET 10
KNEE FORM IMPACT TEST

Test Vehicle: 2012 Blue Bird All American D3 RE School Bus
Test Lab: MGA Research Corporation
NHTSA No.: CC0901
Test Dates: 09/12/11 – 10/26/11

SEAT NUMBER: S7

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° = 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</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 Angle</td>
<td></td>
<td></td>
<td></td>
<td>Yes-PASS</td>
<td>No-FAIL</td>
</tr>
<tr>
<td>K1</td>
<td>-782</td>
<td>220 0º</td>
<td>4.89</td>
<td>4.69</td>
<td>3,650</td>
<td>2,706</td>
<td>1935</td>
</tr>
<tr>
<td>K2</td>
<td>-680</td>
<td>220 0º</td>
<td>4.92</td>
<td>5.03</td>
<td>3,760</td>
<td>2,561</td>
<td>2669</td>
</tr>
<tr>
<td>K3</td>
<td>-579</td>
<td>220 0º</td>
<td>4.88</td>
<td>4.86</td>
<td>3,250</td>
<td>2,040</td>
<td></td>
</tr>
<tr>
<td>K4</td>
<td>-478</td>
<td>220 0º</td>
<td>4.90</td>
<td>4.97</td>
<td>3,130</td>
<td>1,938</td>
<td></td>
</tr>
<tr>
<td>K5</td>
<td>-377</td>
<td>220 0º</td>
<td>4.86</td>
<td>5.06</td>
<td></td>
<td>2,020</td>
<td>1935</td>
</tr>
<tr>
<td>K6</td>
<td>-276</td>
<td>220 0º</td>
<td>4.83</td>
<td>4.89</td>
<td></td>
<td>2,046</td>
<td>2669</td>
</tr>
<tr>
<td>K7</td>
<td>-174</td>
<td>220 0º</td>
<td>4.81</td>
<td>4.74</td>
<td></td>
<td>2,062</td>
<td></td>
</tr>
<tr>
<td>K8</td>
<td>-72</td>
<td>220 0º</td>
<td>4.83</td>
<td>4.69</td>
<td></td>
<td>2,295</td>
<td></td>
</tr>
</tbody>
</table>

* Impact velocity from item No. 7 below
** Impact velocity range = 4.86 mps, +0.076, -0 mps for contact area (K1 through K4)
** Impact velocity range = 4.86 mps, +0, -0.076 mps for contact area (K5 through K8)

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 plot K1 through K8.
8. Attach force vs. time plots for K5, K6, K7 and K8.

Comments: 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: 10/14/11
DATA SHEET 10
KNEE FORM IMPACT TEST

Test Vehicle: 2012 Blue Bird All American D3 RE School Bus  
NHTSA No.: CC0901
Test Lab: MGA Research Corporation  
Test Dates: 09/12/11 – 10/26/11

SEAT NUMBER: S15

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° = 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</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>
<th>Yes- PASS</th>
<th>No- FAIL</th>
<th>Yes- PASS</th>
<th>No- FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>K1</td>
<td>296, 216, 0º</td>
<td>4.91</td>
<td>5.03</td>
<td>3,450</td>
<td>2,100</td>
<td>PASS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K2</td>
<td>399, 215, 0º</td>
<td>4.91</td>
<td>4.98</td>
<td>2,940</td>
<td>2,136</td>
<td>PASS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K3</td>
<td>503, 212, 0º</td>
<td>4.93</td>
<td>5.04</td>
<td>2,930</td>
<td>2,135</td>
<td>PASS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K4</td>
<td>503, 209, 0º</td>
<td>4.92</td>
<td>5.08</td>
<td>3,420</td>
<td>2,164</td>
<td>PASS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K5</td>
<td>94, 221, 0º</td>
<td>4.84</td>
<td>4.94</td>
<td></td>
<td>2,058</td>
<td>PASS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K6</td>
<td>195, 219, 0º</td>
<td>4.84</td>
<td>4.86</td>
<td></td>
<td>1,964</td>
<td>PASS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K7</td>
<td>76, 31, 0º</td>
<td>4.81</td>
<td>4.88</td>
<td></td>
<td>2,264</td>
<td>PASS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>K8</td>
<td>180, 30, 0º</td>
<td>4.82</td>
<td>4.90</td>
<td></td>
<td>2,083</td>
<td>PASS</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

* Impact velocity from item No. 7 below
** Impact velocity range = 4.86 mps, +0.076, -0 mps for contact area (K1 through K4)
** Impact velocity range = 4.86 mps, +0, -0.076 mps for contact area (K5 through K8)

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 plot K1 through K8.
8. Attach force vs. time plots for K5, K6, K7 and K8.

Comments: 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: 10/18/11
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:
   - $0^\circ = \text{Parallel with Floor, (}+\text{) is Up, (}^-\text{) is Down}$
   - X = From Inboard Edge of the Barrier
   - Y = Measured Vertically from the SRP
**KNEE FORM IMPACT TEST**

4. Complete the following table:

<table>
<thead>
<tr>
<th>Knee impact &amp; Test #</th>
<th>Location</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>Yes- PASS</td>
<td>No- FAIL</td>
</tr>
<tr>
<td>K1</td>
<td>-79</td>
<td>120</td>
<td>0º</td>
<td>4.88</td>
<td>4.91</td>
<td>4,170</td>
<td>1,964</td>
</tr>
<tr>
<td>K2</td>
<td>-96</td>
<td>220</td>
<td>0º</td>
<td>4.90</td>
<td>4.72</td>
<td>3,820</td>
<td>1,932</td>
</tr>
<tr>
<td>K3</td>
<td>-196</td>
<td>220</td>
<td>0º</td>
<td>4.86</td>
<td>4.97</td>
<td>4,110</td>
<td>1,999</td>
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<tr>
<td>K4</td>
<td>-298</td>
<td>220</td>
<td>0º</td>
<td>4.91</td>
<td>5.01</td>
<td>4,100</td>
<td>2,303</td>
</tr>
<tr>
<td>K5</td>
<td>-653</td>
<td>120</td>
<td>0º</td>
<td>4.84</td>
<td>4.79</td>
<td>2,001</td>
<td></td>
</tr>
<tr>
<td>K6</td>
<td>-550</td>
<td>120</td>
<td>0º</td>
<td>4.83</td>
<td>4.66</td>
<td>1,575</td>
<td></td>
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<tr>
<td>K7</td>
<td>-449</td>
<td>120</td>
<td>0º</td>
<td>4.82</td>
<td>4.97</td>
<td>1,849</td>
<td></td>
</tr>
<tr>
<td>K8</td>
<td>-346</td>
<td>120</td>
<td>0º</td>
<td>4.84</td>
<td>4.68</td>
<td>2,096</td>
<td></td>
</tr>
</tbody>
</table>

* Impact velocity from item No. 7 below

** Impact velocity range = 4.86 mps, +0.076, -0 mps for contact area (K1 through K4)

** Impact velocity range = 4.86 mps, +0, -0.076 mps for contact area (K5 through K8)

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 plot K1 through K8.

8. Attach force vs. time plots for K5, K6, K7 and K8.

Comments: 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.

Recorded By: [Signature]

Approved By: [Signature] Date: 09/20/11
BARRIER NUMBER: B18

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° = Parallel with Floor, (+) is Up, (-) is Down
   X = From Inboard Edge of the Barrier
   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</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>Yes-</td>
<td>No-FAIL</td>
</tr>
<tr>
<td>K1</td>
<td>266</td>
<td>215</td>
<td>0º</td>
<td>4.93</td>
<td>5.06</td>
<td>PASS</td>
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<tr>
<td>K2</td>
<td>367</td>
<td>215</td>
<td>0º</td>
<td>4.90</td>
<td>5.03</td>
<td>PASS</td>
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</tr>
<tr>
<td>K3</td>
<td>467</td>
<td>212</td>
<td>0º</td>
<td>4.89</td>
<td>4.80</td>
<td>PASS</td>
<td></td>
</tr>
<tr>
<td>K4</td>
<td>570</td>
<td>210</td>
<td>0º</td>
<td>4.88</td>
<td>5.35</td>
<td>PASS</td>
<td></td>
</tr>
<tr>
<td>K5</td>
<td>62</td>
<td>218</td>
<td>0º</td>
<td>4.84</td>
<td>5.02</td>
<td>PASS</td>
<td></td>
</tr>
<tr>
<td>K6</td>
<td>173</td>
<td>216</td>
<td>0º</td>
<td>4.85</td>
<td>4.87</td>
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<tr>
<td>K7</td>
<td>103</td>
<td>116</td>
<td>0º</td>
<td>4.80</td>
<td>5.06</td>
<td>PASS</td>
<td></td>
</tr>
<tr>
<td>K8</td>
<td>205</td>
<td>115</td>
<td>0º</td>
<td>4.79</td>
<td>4.70</td>
<td>PASS</td>
<td></td>
</tr>
</tbody>
</table>

* Impact velocity from item No. 7 below

** Impact velocity range = 4.86 mps, +0.076, -0 mps for contact area (K1 through K4)

** Impact velocity range = 4.86 mps, +0, -0.076 mps for contact area (K5 through K8)

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 plot K1 through K8.

8. Attach force vs. time plots for K5, K6, K7 and K8.

Comments: 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.

Recorded By: 

Approved By: Michael January

Date: 10/20/11
<table>
<thead>
<tr>
<th>Test Vehicle: 2012 Blue Bird All American D3 RE School Bus</th>
<th>NHTSA No.: CC0901</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Lab: MGA Research Corporation</td>
<td>Test Dates: 09/12/11 – 10/26/11</td>
</tr>
</tbody>
</table>

**WHEELCHAIR LOCATION: W4**

<table>
<thead>
<tr>
<th>Test</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Are all wheelchair securement and occupant restraint anchorages designed for forward wheelchair position? Yes – Pass; No – Fail</td>
</tr>
<tr>
<td>2.</td>
<td>Each wheelchair location shall have not less than four wheelchair securement anchorages (Type A or C) – two located in front of the wheelchair and two in the rear. Type C anchorage may be used in rear of the wheelchair only. Number of Type A anchorages in front of the wheelchair? 2 (≥2 Pass; &lt;2 Fail)</td>
</tr>
<tr>
<td>3.</td>
<td>Number of anchorages behind the wheelchair? Type A <em>0</em>; Type C <em>2</em>; Total: 2 (≥2 Pass; &lt;2 Fail)</td>
</tr>
<tr>
<td>4.</td>
<td>Each wheelchair location shall have not less than two wheelchair occupant pelvis and upper torso restraint anchorage (Type B, C, or combination). The pelvic belt must not terminate at the wheelchair. Number of anchorages? Type B <em>0</em>; Type C <em>2</em>; Total: 2 (≥2 Pass; &lt;2 Fail)</td>
</tr>
<tr>
<td>5.</td>
<td>The wheelchair location has at least one Type D anchorage? Yes – Pass; No – Fail</td>
</tr>
<tr>
<td>6.</td>
<td>The wheelchair securement device has means to limit movement of the wheelchair? Yes – Pass; No – Fail</td>
</tr>
</tbody>
</table>
## WHEELCHAIR OCCUPANT RESTRAINT ANCHORAGES AND RESTRAINTS

<table>
<thead>
<tr>
<th>Wheelchair Location</th>
<th>Anchorage Location</th>
<th>Anchorage Type</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>W4</td>
<td>LF</td>
<td>A</td>
<td>13,344</td>
<td>13,448</td>
<td>PASS</td>
<td>Q11468</td>
</tr>
<tr>
<td></td>
<td>RF</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>LR</td>
<td>B</td>
<td>13,344</td>
<td>13,391</td>
<td>PASS</td>
<td>Q11467</td>
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<tr>
<td></td>
<td>RR</td>
<td>C</td>
<td>26,688</td>
<td>26,805</td>
<td>PASS</td>
<td>Q11466</td>
</tr>
<tr>
<td></td>
<td>Upper Torso</td>
<td>D</td>
<td>6,672</td>
<td>6,741</td>
<td>PASS</td>
<td>Q11469</td>
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**COMMENTS:** None

Recorded By: [Signature]

Approved By: [Signature] Date: 10/26/11
## 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>
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<td>Interface</td>
<td>1210AF-300 / 184552</td>
<td>06/14/11</td>
<td>12/14/11</td>
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<tr>
<td>Load Cell</td>
<td>PCB</td>
<td>1315-101-01A / 634-10k</td>
<td>04/07/11</td>
<td>10/07/11</td>
</tr>
<tr>
<td>Load Cell</td>
<td>PCB</td>
<td>1315-101-01A / 634-10k</td>
<td>10/07/11</td>
<td>04/07/12</td>
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<tr>
<td>Load Cell</td>
<td>PCB</td>
<td>1315-101-01A / 671</td>
<td>08/10/11</td>
<td>02/10/12</td>
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<tr>
<td>Load Cell</td>
<td>Key Transducer</td>
<td>1315-101-01 / 260</td>
<td>08/10/11</td>
<td>02/10/12</td>
</tr>
<tr>
<td>Load Cell</td>
<td>Key Transducer</td>
<td>1315-101-01 / 271</td>
<td>08/10/11</td>
<td>02/10/12</td>
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<tr>
<td>Load Cell</td>
<td>Interface</td>
<td>1210AF-25K-B / 137781</td>
<td>09/07/11</td>
<td>03/07/12</td>
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<tr>
<td>Load Cell</td>
<td>Interface</td>
<td>1010AF-5K-B / 258576</td>
<td>03/22/11</td>
<td>09/22/11</td>
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<tr>
<td>Load Cell</td>
<td>Interface</td>
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<td>10/07/11</td>
<td>04/07/12</td>
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<td>Ametek</td>
<td>P-25A / 1202-19367</td>
<td>08/25/11</td>
<td>02/25/12</td>
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<tr>
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<td>09/07/11</td>
<td>03/07/12</td>
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<td>Inclinometer</td>
<td>Digital Protractor</td>
<td>Pro 360 / 001</td>
<td>Daily</td>
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<td>Steel Tape</td>
<td>Stanley</td>
<td>Powerlock / 604</td>
<td>08/04/11</td>
<td>02/04/12</td>
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<td>MGA</td>
<td>IF2003A</td>
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<td>Sony</td>
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<td>Sokkia Corp.</td>
<td>Planix5 / 007319</td>
<td>Daily</td>
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## SECTION 5
### PHOTOGRAPHS

#### TABLE OF PHOTOGRAPHS

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<th>No.</th>
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<td>Left Side View of School Bus</td>
<td>78</td>
</tr>
<tr>
<td>2</td>
<td>Right Side View of School Bus</td>
<td>79</td>
</tr>
<tr>
<td>3</td>
<td>¾ Front View From Left Side of School Bus</td>
<td>80</td>
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<td>4</td>
<td>¾ Front View From Right Side of School Bus</td>
<td>81</td>
</tr>
<tr>
<td>5</td>
<td>¾ Rear View From Left Side of School Bus</td>
<td>82</td>
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<td>6</td>
<td>¾ Rear View From Right Side of School Bus</td>
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<td>7</td>
<td>Vehicle Certification Label</td>
<td>84</td>
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<td>Vehicle Information Label</td>
<td>85</td>
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<tr>
<td>9</td>
<td>Vehicle Interior View From Front to Rear</td>
<td>86</td>
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<td>10</td>
<td>Vehicle Interior View From Rear to Front</td>
<td>87</td>
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<tr>
<td>11</td>
<td>Seat Cushion Retention Set Up on Seat S17</td>
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<tr>
<td>12</td>
<td>Pre-Test of Seat S1 Force Deflection Forward Test</td>
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<td>Post-Test of Seat S1 Force Deflection Forward Test</td>
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<td>Post-Test of Seat S16 Force Deflection Forward Test</td>
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<td>Pre-Test of Barrier B13 Force Deflection Forward Test</td>
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<td>Pre-Test of Seat S11 Force Deflection Rearward Test</td>
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<td>Post-Test of Seat S11 Force Deflection Rearward Test</td>
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<td>Post-Test of Head and Knee Impact Locations on Seat S2</td>
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<td>Post-Test of Head and Knee Impact Locations on Seat S7</td>
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<td>Post-Test of Head and Knee Impact Locations on Seat S15</td>
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<td>Post-Test of Head and Knee Impact Locations on Barrier B6</td>
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<td>Post-Test of Head and Knee Impact Locations on Barrier B18</td>
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<td>35</td>
<td>W4 Wheelchair Anchorage (LF) Location</td>
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<td>W4 Wheelchair Anchorage (LR) Location</td>
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<td>W4 Wheelchair Anchorage (RR) Location</td>
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<td>38</td>
<td>W4 Wheelchair Anchorage (Upper Torso) Location</td>
<td>115</td>
</tr>
</tbody>
</table>
Test Vehicle:
2012 Blue Bird All American D3 RE School Bus

NHTSA No.:
CC0901
09/12/11 – 10/26/11

Test Lab:
MGA Research Corporation

Left Side View of School Bus
Test Vehicle: 2012 Blue Bird All American D3 RE School Bus
Test Lab: MGA Research Corporation
NHTSA No.: CC0901
Test Dates: 09/12/11 – 10/26/11

Right Side View of School Bus
Test Vehicle: 2012 Blue Bird All American D3 RE School Bus
Test Lab: MGA Research Corporation
NHTSA No.: CC0901
Test Dates: 09/12/11 – 10/26/11

¾ Front View From Left Side of School Bus
Test Vehicle: 2012 Blue Bird All American D3 RE School Bus
NHTSA No.: CC0901
Test Dates: 09/12/11 – 10/26/11
Test Lab: MGA Research Corporation

¾ Front View From Right Side of School Bus
Test Vehicle: 2012 Blue Bird All American D3 RE School Bus
Test Lab: MGA Research Corporation
NHTSA No.: CC0901
Test Dates: 09/12/11 – 10/26/11

¾ Rear View From Left Side of School Bus
Test Vehicle: 2012 Blue Bird All American D3 RE School Bus
Test Lab: MGA Research Corporation
NHTSA No.: CC0901
Test Dates: 09/12/11 – 10/26/11

¾ Rear View From Right Side of School Bus
Test Vehicle: 2012 Blue Bird All American D3 RE School Bus
Test Lab: MGA Research Corporation
NHTSA No.: CC0901
Test Dates: 09/12/11 – 10/26/11

Vehicle Information Label
Test Vehicle: 2012 Blue Bird All American D3 RE School Bus
Test Lab: MGA Research Corporation
NHTSA No.: CC0901
Test Dates: 09/12/11 – 10/26/11

Vehicle Interior View From Front to Rear
<table>
<thead>
<tr>
<th>Test Vehicle:</th>
<th>2012 Blue Bird All American D3 RE School Bus</th>
</tr>
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<tbody>
<tr>
<td>NHTSA No.:</td>
<td>CC0901</td>
</tr>
<tr>
<td>Test Lab:</td>
<td>MGA Research Corporation</td>
</tr>
<tr>
<td>Test Dates:</td>
<td>09/12/11 – 10/26/11</td>
</tr>
</tbody>
</table>
Test Vehicle: 2012 Blue Bird All American D3 RE School Bus
NHTSA No.: C0901
Test Lab: MGA Research Corporation
Test Dates: 09/12/11 – 10/26/11

Seat Cushion Retention Set Up on Seat S17
Pre-Test of Seat S1 Force Deflection Forward Test
Post-Test of Seat S1 Force Deflection Forward Test
Pre-Test of Seat S6 Force Deflection Forward Test
Test Vehicle:
2012 Blue Bird All American D3 RE School Bus

NHTSA No.:
CC0901

Test Lab:
MGA Research Corporation

Test Dates:
09/12/11 – 10/26/11

Post-Test of Seat S6 Force Deflection Forward Test
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Pre-Test of Seat S16 Force Deflection Forward Test
Post-Test of Seat S16 Force Deflection Forward Test
Pre-Test of Barrier B1 Force Deflection Forward Test
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Post-Test of Barrier B1 Force Deflection Forward Test
Test Vehicle:
2012 Blue Bird All American D3 RE School Bus

Test Lab:
MGA Research Corporation

NHTSA No.:
CC0901

Test Dates:
09/12/11 – 10/26/11

Pre-Test of Barrier B13 Force Deflection Forward Test
Test Vehicle:
2012 Blue Bird All American D3 RE School Bus

Test Lab:
MGA Research Corporation

NHTSA No.:
CC0901

Test Dates:
09/12/11 – 10/26/11

Post-Test of Barrier B13 Force Deflection Forward Test
Test Vehicle: 2012 Blue Bird All American D3 RE School Bus
Test Lab: MGA Research Corporation
NHTSA No.: CC0901
Test Dates: 09/12/11 – 10/26/11

Pre-Test of Barrier B16 Force Deflection Forward Test
Test Vehicle: 2012 Blue Bird All American D3 RE School Bus
Test Lab: MGA Research Corporation
NHTSA No.: CC0901
Test Dates: 09/12/11 – 10/26/11

Post-Test of Barrier B16 Force Deflection Forward Test
Test Vehicle: 2012 Blue Bird All American D3 RE School Bus
Test Lab: MGA Research Corporation
NHTSA No.: CC0901
Test Dates: 09/12/11 – 10/26/11

Post-Test of Barrier B16 Force Deflection Forward Test - Damage View 2
Pre-Test of Seat S8 Force Deflection Rearward Test
Test Vehicle: 2012 Blue Bird All American D3 RE School Bus  NHTSA No.: CC0901
Test Lab: MGA Research Corporation  Test Dates: 09/12/11 – 10/26/11

Post-Test of Seat S8 Force Deflection Rearward Test
Post-Test of Seat S11 Force Deflection Rearward Test
Post-Test of Head and Knee Impact Locations on Seat S2
Post-Test of Head and Knee Impact Locations on Seat S7
Post-Test of Head and Knee Impact Locations on Seat S15
Test Vehicle: 2012 Blue Bird All American D3 RE School Bus
NHTSA No.: CC0901
Test Dates: 09/12/11 – 10/26/11

MGA Research Corporation

Post-Test of Head and Knee Impact Locations on Barrier B6
Post-Test of Head and Knee Impact Locations on Barrier B18
Test Vehicle: 2012 Blue Bird All American D3 RE School Bus  
NHTSA No.: CC0901
Test Lab: MGA Research Corporation  
Test Dates: 09/12/11 – 10/26/11

W4 Wheelchair Anchorage (LF) Location
Test Vehicle:
2012 Blue Bird All American D3 RE School Bus

Test Lab:
MGA Research Corporation

NHTSA No.:
CC0901

Test Dates:
09/12/11 – 10/26/11

W4 Wheelchair Anchorage (LR) Location
Test Vehicle:
2012 Blue Bird All American D3 RE School Bus

NHTSA No.:
CC2901

Test Lab:
MGA Research Corporation

Test Dates:
09/12/11 – 10/26/11

MGA Research Corporation

2012 Blue Bird All American D3 RE School Bus

Test Vehicle:
Test Vehicle: 2012 Blue Bird All American D3 RE School Bus
Test Lab: MGA Research Corporation
NHTSA No.: CC0901
Test Dates: 09/12/11 – 10/26/11

W4 Wheelchair Anchorage (Upper Torso) Location
## SECTION 6
### TEST PLOTS

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SECTION 6 (CONTINUED)

TEST PLOTS

Seat Back Forward Deflection Seat S1 (Lower) Force vs. Time

Seat Back Forward Deflection Seat S1 (Lower) Displacement vs. Time

SECTION 6 (CONTINUED)
TEST PLOTS

Seat Back Forward Deflection Seat S1 (Upper) Force vs. Time

Seat Back Forward Deflection Seat S1 (Upper) Displacement vs. Time

SECTION 6 (CONTINUED)

TEST PLOTS
Seat Back Forward Deflection Seat S1 (Upper) Force vs. Displacement
SECTION 6 (CONTINUED)

TEST PLOTS

Seat Back Forward Deflection Seat S6 (Lower) Force vs. Time

Seat Back Forward Deflection Seat S6 (Lower) Displacement vs. Time
SECTION 6 (CONTINUED)

TEST PLOTS

Seat Back Forward Deflection Seat S6 (Upper) Force vs. Time

Seat Back Forward Deflection Seat S6 (Upper) Displacement vs. Time
Seat Back Forward Deflection Seat S6 (Upper) Force vs. Displacement
SECTION 6 (CONTINUED)
TEST PLOTS

Seat Back Forward Deflection Seat S16 (Lower) Force vs. Time

Seat Back Forward Deflection Seat S16 (Lower) Displacement vs. Time
SECTION 6 (CONTINUED)

TEST PLOTS

Seat Back Forward Deflection Seat S16 (Upper) Force vs. Time

Seat Back Forward Deflection Seat S16 (Upper) Displacement vs. Time

SECTION 6 (CONTINUED)
Seat Back Forward Deflection Seat S16 (Upper) Force vs. Displacement
SECTION 6 (CONTINUED)

TEST PLOTS

Barrier Forward Deflection Barrier B1 (Lower) Force vs. Time

Barrier Forward Deflection Barrier B1 (Lower) Displacement vs. Time
SECTION 6 (CONTINUED)

TEST PLOTS

Barrier Forward Deflection Barrier B1 (Upper) Force vs. Time

Barrier Forward Deflection Barrier B1 (Upper) Displacement vs. Time
Barrier Forward Deflection Barrier B1 (Upper) Force vs. Displacement
SECTION 6 (CONTINUED)
TEST PLOTS

Barrier Forward Deflection Barrier B13 (Lower) Force vs. Time

Barrier Forward Deflection Barrier B13 (Lower) Displacement vs. Time
SECTION 6 (CONTINUED)

TEST PLOTS

Barrier Forward Deflection Barrier B13 (Upper) Force vs. Time

Barrier Forward Deflection Barrier B13 (Upper) Displacement vs. Time
Barrier Forward Deflection Barrier B13 (Upper) Force vs. Displacement
SECTION 6 (CONTINUED)

TEST PLOTS

Barrier Forward Deflection Barrier B16 (Lower) Force vs. Time

Barrier Forward Deflection Barrier B16 (Lower) Displacement vs. Time
SECTION 6 (CONTINUED)
TEST PLOTS

Barrier Forward Deflection Barrier B16 (Upper) Force vs. Time

Barrier Forward Deflection Barrier B16 (Upper) Displacement vs. Time
SECTION 6 (CONTINUED)

TEST PLOTS

Barrier Forward Deflection Barrier B16 (Upper) Force vs. Displacement

[Graph showing Force (N) vs Displacement (mm) with specific values and labels]

Maximum: 10252.42 N @ 355.84 mm
Minimum: -14.40 N @ 185.62 mm

X, Y: (0, 0.2, <<>)
SECTION 6 (CONTINUED)

TEST PLOTS

Seat Back Rearward Deflection Seat S8 (Lower) Force vs. Time

Seat Back Rearward Deflection Seat S8 (Lower) Displacement vs. Time
SECTION 6 (CONTINUED)

TEST PLOTS

Seat Back Rearward Deflection Seat S8 (Lower) Force vs. Displacement
SECTION 6 (CONTINUED)

TEST PLOTS

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

Maximum: 7821 N @ 14 sec  
Minimum: -10 N @ 54 sec

**Seat Back Rearward Deflection Seat S11 (Lower) Force vs. Time**

**Displacement (mm) vs Time (sec)**

Maximum: 255 mm @ 30 sec  
Minimum: 0 mm @ 0 sec

**Seat Back Rearward Deflection Seat S11 (Lower) Displacement vs. Time**
Seat Back Rearward Deflection Seat S11 (Lower) Force vs. Displacement
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901  speed trap: 1.54 m/s
Test Date: 9-27-2011
Location: S2H1

Head X Acceleration (G's) VS TIME (S)
Max: 2.41 G's
TMax: 0.18 S
Min: -6.18 G's
TMin: 0.04 S

HIC 36: 2.03  T1: 17.70 S  T2: 53.70 S

VELOCITY X (m/s) VS TIME (S)
Max: 1.59 m/s
TMax: -0.01 S
Min: -0.73 m/s
TMin: 0.09 S
VEL@IMP: 1.573m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)  
Test Date: 9-27-2011
Vehicle: 2012 Bluebird All American D3 RE  
NHTSA #: CC0901  speed trap: 1.53 m/s

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

- Max: 2.31 G's
- Tmax: 0.18 S
- Min: -5.93 G's
- Tmin: 0.03 S

**HIC 36: 1.66  T1: 18.00 S  T2: 54.00 S**

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

- Max: 1.94 m/s
- Tmax: -0.01 S
- Min: -0.14 m/s
- Tmin: 0.08 S

VEL@IMP: 1.936m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)  
Vehicle: 2012 Bluebird All American D3 RE  
NHTSA #: CC0901  
Test Date: 9-27-2011  
Location: S2H3  

Head X Acceleration (G's) VS TIME (S)  
Max: 1.91 G's  
TMax: 0.19 S  
Min: -6.62 G's  
TMin: 0.03 S  

HIC 36: 1.99  
T1: 16.90 S  
T2: 52.90 S

VELOCITY X (m/s) VS TIME (S)  
Max: 1.21 m/s  
TMax: -0.01 S  
Min: -1.19 m/s  
TMin: 0.09 S  
VEL@IMP: 1.166m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)
Test Date: 9-27-2011
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901  speed trap: 1.58 m/s
Location: S2H4

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

Max: 2.58 G's  
TMax: 0.18 S  
Min: -6.10 G's  
TMin: 0.04 S  
HIC 36: 1.84  
T1: 22.70 S  
T2: 57.10 S

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

Max: 2.07 m/s  
TMax: -0.01 S  
Min: -0.12 m/s  
TMin: 0.09 S  
VEL@IMP: 2.065m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)  
Vehicle: 2012 Bluebird All American D3 RE  
NHTSA #: CC0901  
Test Date: 9-27-2011  
Location: S2H5

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

Max: 2.57 G's  
TMax: 0.18 S  
Min: -5.87 G's  
TMin: 0.04 S

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

Max: 2.06 m/s  
TMax: -0.01 S  
Min: -0.09 m/s  
TMin: 0.09 S  
VEL@IMP: 2.056m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901        speed trap: 1.58 m/s
Test Date: 9-27-2011
Location: S2H6

Head X Acceleration (G's) VS TIME (S)
Max: 1.63 G's
TMax: 0.24 S
Min: -6.17 G's
TMin: 0.04 S
HIC 36: 1.87
T1: 23.30 S
T2: 59.30 S

VELOCITY X (m/s) VS TIME (S)
Max: 1.47 m/s
TMax: -0.01 S
Min: -0.86 m/s
TMin: 0.09 S
VEL@IMP: 1.443 m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)  
Vehicle: 2012 Bluebird All American D3 RE  
NHTSA #: CC0901  
Test Date: 9-28-2011  
Location: S2H7

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

- Max: 2.20 G's  
- Tmax: 0.20 S  
- Min: -6.14 G's  
- Tmin: 0.05 S

**HIC 36: 1.76**  
**T1: 29.00 S**  
**T2: 65.00 S**

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

- Max: 1.65 m/s  
- Tmax: -0.01 S  
- Min: -0.77 m/s  
- Tmin: 0.10 S  
- VEL@IMP: 1.62 m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)  
Vehicle: 2012 Bluebird All American D3 RE  
NHTSA #: CC0901  speed trap: 1.57 m/s

Test Date: 10-12-2011  
Location: S7H1

Head X Acceleration (G's) VS TIME (S)  
HIC 36: 2.21  T1: 16.40 S  T2: 52.40 S

- Max: 2.87 G's  
  Tmax: 0.15 S  
  Min: -6.15 G's  
  Tmin: 0.03 S

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

- Max: 1.61 m/s  
  Tmax: -0.01 S  
  Min: -0.76 m/s  
  Tmin: 0.08 S  
  VEL@IMP: 1.593m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)  Test Date: 10-12-2011
Vehicle: 2012 Bluebird All American D3 RE  Location: S7H2
NHTSA #: CC0901  speed trap: 1.52 m/s

Max: 2.90 G's  TMax: 0.16 S
Min: -6.51 G's  Tmin: 0.03 S

Max: 1.67 m/s  TMax: -0.01 S
Min: -0.62 m/s  Tmin: 0.08 S
VEL@IMP: 1.651 m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)  Test Date: 10-12-2011
Vehicle: 2012 Bluebird All American D3 RE  Location: S7H3
NHTSA #: CC0901  speed trap: 1.53 m/s

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

- Max: 2.83 G's
- Tmax: 0.16 S
- Min: -6.73 G's
- Tmin: 0.03 S

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

- Max: 1.89 m/s
- Tmax: -0.01 S
- Min: -0.30 m/s
- Tmin: 0.08 S
- VEL@IMP: 1.881m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)
Test Date: 10-12-2011
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901 speed trap: 1.58 m/s

Head X Acceleration (G’s) VS TIME (S)
HIC 36: 1.84 T1: 22.70 S T2: 57.60 S
Max: 2.67 Tmax: 0.18 S
Min: -6.23 Tmin: 0.04 S

VELOCITY X (m/s) VS TIME (S)
Max: 2.07 m/s Tmax: -0.01 S
Min: -0.10 m/s Tmin: 0.08 S
VEL@IMP: 2.065m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)  
Test Date: 10-12-2011  
Vehicle: 2012 Bluebird All American D3 RE  
NHTSA #: CC0901  speed trap: 1.55 m/s  
Location: S7H5

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

- Max: 2.39 G's  
- Tmax: 0.17 S  
- Min: -6.36 G's  
- Tmin: 0.04 S

VEL@IMP: 1.429m/s  
HIC 36: 1.88  
T1: 24.00 S  
T2: 57.20 S

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

- Max: 1.46 m/s  
- Tmax: -0.01 S  
- Min: -0.94 m/s  
- Tmin: 0.10 S

VEL@IMP: 1.429m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)

Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901  
speed trap: 1.58 m/s

Test Date: 10-12-2011  
Location: S7H6

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

Max: 2.44 G's  
TMax: 0.18 S  
Min: -6.27 G's  
TMin: 0.04 S

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

Max: 1.62 m/s  
TMax: -0.01 S  
Min: -0.74 m/s  
TMin: 0.09 S  
VEL@IMP: 1.592m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)  Test Date: 10-13-2011
Vehicle: 2012 Bluebird All American D3 RE  Location: S7H7
NHTSA #: CC0901  speed trap: 1.54 m/s

Head X Acceleration (m/s²) VS TIME (S)

- HIC 36: 2.12  T1: 21.30 S  T2: 54.10 S
- Max: 1.65
- Tmax: 0.19 S
- Min: -6.76
- Tmin: 0.04 S

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

- Max: 1.29 m/s
- Tmax: -0.01 S
- Min: -1.00 m/s
- Tmin: 0.08 S
- Vel@Imp: 1.256 m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)

Test Date: 10-19-2011
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901 speed trap: 1.56 m/s
Location: S15H1

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

HIC 36: 2.09  T1: 18.00 S  T2: 54.00 S

Max: 2.24 G's  Tmax: 0.14 S
Min: -6.72 G's  Tmin: 0.03 S

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

Max: 1.77 m/s  Tmax: -0.01 S
Min: -0.52 m/s  Tmin: 0.08 S
VEL@IMP: 1.758m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)  
Test Date: 10-19-2011  
Vehicle: 2012 Bluebird All American D3 RE  
NHTSA #: CC0901  speed trap: 1.56 m/s  
Location: S15H2

Head X Acceleration (G's) VS TIME (S)  
HIC 36: 2.04  T1: 16.60 S  T2: 52.60 S

Max: 2.54 G's  
TMax: 0.14 S  
Min: -6.16 G's  
TMin: 0.03 S

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

Max: 1.92 m/s  
TMax: -0.01 S  
Min: -0.32 m/s  
TMin: 0.07 S  
VEL@IMP: 1.915m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)
Test Date: 10-19-2011
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901 speed trap: 1.52 m/s
Location: S15H3

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

Max: 0.35 G's
TMax: 0.13 S
Min: -5.85 G's
TMin: 0.05 S

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

Max: 1.17 m/s
TMax: -0.01 S
Min: -1.24 m/s
TMin: 0.10 S
VEL@IMP: 1.13m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)  Test Date: 10-19-2011
Vehicle: 2012 Bluebird All American D3 RE  Location: S15H4
NHTSA #: CC0901  speed trap: 1.52 m/s

Head X Acceleration (G's) VS TIME (S)  HIC 36: 1.83  T1: 26.50 S  T2: 60.60 S
Max: 0.40 G's  Tmax: 0.13 S  Min: -6.15 G's  Tmin: 0.05 S

VELOCITY X (m/s) VS TIME (S)
Max: 1.29 m/s  Tmax: -0.01 S  Min: -1.05 m/s  Tmin: 0.10 S  Vel@IMP: 1.262 m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)  Test Date: 10-19-2011  Vehicle: 2012 Bluebird All American D3 RE  NHTSA #: CC0901 speed trap: 1.60 m/s

Head X Acceleration (G's) VS TIME (S)  HIC 36: 1.92  T1: 36.60 S  T2: 72.50 S

Max: 0.22 G's  Tmax: 0.11 S  Min: -6.22 G's  Tmin: 0.05 S

VEL@IMP: 1.038 m/s

FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)  Test Date: 10-19-2011  Vehicle: 2012 Bluebird All American D3 RE  NHTSA #: CC0901 speed trap: 1.60 m/s

Head X Acceleration (G's) VS TIME (S)  HIC 36: 1.92  T1: 36.60 S  T2: 72.50 S

Max: 0.22 G's  Tmax: 0.11 S  Min: -6.22 G's  Tmin: 0.05 S

VEL@IMP: 1.038 m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)  
Test Date: 10-19-2011  
Vehicle: 2012 Bluebird All American D3 RE  
NHTSA #: CC0901  
speed trap: 1.53 m/s  

Head X Acceleration (G's) VS TIME (S)  
HIC 36: 1.97  
T1: 28.50 S  
T2: 59.60 S  
Max: 0.54 G's  
TMax: 0.11 S  
Min: -6.59 G's  
TMin: 0.04 S

VELOCITY X (m/s) VS TIME (S)  
Max: 1.89 m/s  
TMax: -0.01 S  
Min: -0.29 m/s  
TMin: 0.09 S  
VEL@IMP: 1.877 m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)  
Test Date: 9-20-11  
Vehicle: 2012 Blue Bird All American D3 RE  
Location: B6H1  
NHTSA #: CC0901  
speed trap: 1.59 m/s

Head X Acceleration (G's) VS TIME (S)  
HIC 36: 2.59  
T1: 14.90 S  
T2: 50.90 S  
Max: 0.84 G's  
TMax: 0.12 S  
Min: -6.69 G's  
TMin: 0.03 S

VELOCITY X (m/s) VS TIME (S)  
Max: 1.48 m/s  
TMax: -0.01 S  
Min: -1.01 m/s  
TMin: 0.07 S  
VEL@IMP: 1.44m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)

Test Date: 9-20-11
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901    Speed Trap: 1.60 m/s

Vehicle: 2012 Bluebird All American D3 RE
Location: B6H2

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

Max: 0.61 G's
TMax: 0.09 S
Min: -7.21 G's
TMin: 0.03 S

HIC 36: 2.35
T1: 15.60 S
T2: 49.40 S

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

Max: 1.71 m/s
TMax: -0.01 S
Min: -0.66 m/s
TMin: 0.08 S
VEL@IMP: 1.682m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)

Vehicle: 2012 Blue Bird All American D3 RE
NHTSA #: CC0901  Speed trap: 1.60 m/s

Test Date: 9-20-11  Location: B6H3

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

- Max: 0.72 G's
- Tmax: 0.09 S
- Min: -7.27 G's
- Tmin: 0.02 S

HIC 36: 2.23  T1: 14.10 S  T2: 44.30 S

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

- Max: 1.93 m/s
- Tmax: -0.01 S
- Min: -0.37 m/s
- Tmin: 0.08 S
- VEL@IMP: 1.91m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)  
Test Date: 9-20-11  
Vehicle: 2012 Blue Bird All American D3 RE  
NHTSA #: CC0901 speed trap: 1.57 m/s  
Location: B6H4

Head X Acceleration (G's) VS TIME (S)  
Max: 0.40 G's  
TMax: 0.08 S  
Min: -7.12 G's  
TMin: 0.03 S  
HIC 36: 2.38  
T1: 15.60 S  
T2: 51.40 S

VELOCITY X (m/s) VS TIME (S)  
Max: 1.36 m/s  
TMax: -0.01 S  
Min: -1.02 m/s  
TMin: 0.08 S  
VEL@IMP: 1.322m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)  
Vehicle: 2012 Blue Bird All American D3 RE  
NHTSA #: CC0901  speed trap: 1.54 m/s  
Test Date: 9-20-11  Location: B6H5

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

- Max: 0.42 G's  
- Tmax: 0.09 S  
- Min: -6.68 G's  
- Tmin: 0.03 S  

**HIC 36: 2.03**  
**T1: 19.50 S**  
**T2: 54.50 S**

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

- Max: 1.42 m/s  
- Tmax: -0.01 S  
- Min: -0.88 m/s  
- Tmin: 0.08 S  

VEL@IMP: 1.385m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)  
Test Date: 9-20-2011  
Vehicle: 2012 Bluebird All American D3 RE  
NHTSA #: CC0901  
speed trap: 1.52 m/s  
Location: B6H6

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

- Maximum: 0.40 G's  
- TMax: 0.10 S  
- Minimum: -7.12 G's  
- Tmin: 0.04 S

HIC 36: 2.19  
T1: 22.90 S  
T2: 53.00 S

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

- Maximum: 1.48 m/s  
- Tmax: -0.01 S  
- Minimum: -0.75 m/s  
- Tmin: 0.08 S  
VEL@IMP: 1.434 m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)  Test Date: 9-20-11
Vehicle: 2012 Blue Bird All American D3 RE  Location: B6H7
NHTSA #: CC0901  speed trap: 1.53 m/s

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

Max: 0.44 G's
TMax: 0.09 S
Min: -7.00 G's
TMin: 0.04 S

HIC 36: 2.18  T1: 23.60 S  T2: 55.50 S

VEL@IMP: 1.379 m/s

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

Max: 1.42 m/s
TMax: -0.01 S
Min: -0.86 m/s
TMin: 0.08 S
VEL@IMP: 1.379 m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)  
Vehicle: 2012 Bluebird All American D3 RE  
NHTSA #: CC0901  speed trap: 1.60 m/s  
Test Date: 10-20-2011  Location: B18H1

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

- Max: 2.56 G's  
- Tmax: 0.15 S  
- Min: -7.54 G's  
- Tmin: 0.03 S  

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

- Max: 1.33 m/s  
- Tmax: -0.01 S  
- Min: -1.27 m/s  
- Tmin: 0.08 S  

**HIC 36: 2.34**  
**T1: 13.20 S**  
**T2: 39.50 S**

**VEL@IMP: 1.287 m/s**
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901  speed trap: 1.56 m/s

Test Date: 10-20-2011
Location: B18H2

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

- Max: 2.72 G's
- Tmax: 0.15 S
- Min: -6.62 G's
- Tmin: 0.03 S

HIC 36: 1.77  T1: 15.20 S  T2: 44.20 S

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

- Max: 2.15 m/s
- Tmax: 0.00 S
- Min: 0.02 m/s
- Tmin: 0.08 S
- VEL@IMP: 2.148m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)

Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901  speed trap: 1.55 m/s

Test Date: 10-20-2011
Location: B18H3

Max: 2.70 G's
TMax: 0.16 S
Min: -6.28 G's
TMin: 0.03 S

HIC 36: 1.77  T1: 16.60 S  T2: 51.30 S

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

Max: 2.16 m/s
TMax: -0.01 S
Min: 0.03 m/s
TMin: 0.08 S
VEL@IMP: 2.161 m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)  
Test Date: 10-20-2011  
Vehicle: 2012 Bluebird All American D3 RE  
NHTSA #: CC0901  
speed trap: 1.60 m/s  
Location: B18H4

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

- Max: 2.39 G's  
- Tmax: 0.18 S  
- Min: -6.99 G's  
- Tmin: 0.04 S

**HIC 36: 2.07**  
T1: 21.20 S  
T2: 50.30 S

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

- Max: 1.81 m/s  
- Tmax: -0.01 S  
- Min: -0.47 m/s  
- Tmin: 0.09 S  
VEL@IMP: 1.799 m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)

Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901 speed trap: 1.58 m/s

Test Date: 10-20-2011
Location: B18H5

Max: 2.20 G's
TMax: 0.19 S
Min: -6.18 G's
TMin: 0.04 S

Max: 1.80 m/s
TMax: -0.01 S
Min: -0.36 m/s
TMin: 0.09 S
VEL@IMP: 1.788 m/s
Vehicle: 2012 Bluebird All American D3 RE
Location: B18H6

Test Date: 10-20-2011
NHTSA #: CC0901  speed trap: 1.60 m/s

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

- Max: 1.91 G's
- Tmax: 0.21 S
- Min: -6.45 G's
- Tmin: 0.05 S

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

- Max: 1.41 m/s
- Tmax: -0.01 S
- Min: -0.93 m/s
- Tmin: 0.10 S

VEL@IMP: 1.379 m/s
FMVSS 222 HEAD FORM IMPACTS (1.5 m/s)  
Vehicle: 2012 Bluebird All American D3 RE  
NHTSA #: CC0901  
speed trap: 1.57 m/s  

Test Date: 10-20-2011  
Location: B18H7  

Head X Acceleration (G's) VS TIME (S)  
HIC 36: 1.59  
T1: 27.40 S  
T2: 60.70 S  
Max: 2.09 G's  
TMax: 0.21 S  
Min: -6.06 G's  
TMin: 0.04 S  

VELOcity X (m/s) VS TIME (S)  
Max: 2.00 m/s  
TMax: -0.01 S  
Min: -0.04 m/s  
TMin: 0.09 S  
VEL@IMP: 2.002m/s
HEAD FORM IMPACT (6.69 m/s) Test Date: 9-29-2011
Vehicle: 2012 Bluebird All American D3 RE NHTSA #: CC0901 speed trap: 6.64 m/s Location: S2H8

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

Max: 106.15 G's 
TMax: 0.10 S 
Min: -77.98 G's 
TMin: 0.01 S 

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

Max: 6.76 m/s 
TMax: -0.01 S 
Min: -2.95 m/s 
TMin: 0.06 S 
VEL@IMP: 6.718 m/s

FORCE X (N) VS TIME (S) 

Max: 5,425.45 N 
TMax: 0.10 S 
Min: -3,985.33 N 
TMin: 0.01 S

Energy: 7.30 J
HEAD FORM IMPACT (6.69 m/s) Test Date: 9-29-2011
Vehicle: 2012 Bluebird All American D3 RE NHTSA #: CC0901 speed trap: 6.66 m/s Location: S2H9

Max: 107.66 G's TMax: 0.10 S Min: -73.48 G's TMin: 0.01 S

Max: 6.73 m/s TMax: -0.01 S Min: -3.01 m/s TMin: 0.07 S VEL@IMP: 6.685 m/s

Max: 5,502.54 N TMax: 0.10 S Min: -3,755.70 N TMin: 0.01 S

Energy: 7.16 J
HEAD FORM IMPACT (6.69 m/s)  
Test Date: 9-29-2011  
Vehicle: 2012 Bluebird All American D3 RE  
NHTSA #: CC0901  speed trap: 6.68 m/s  
Location: S2H11

Max: 93.73 G's  
TMax: 0.11 S  
Min: -67.15 G's  
TMin: 0.01 S

Max: 6.76 m/s  
TMax: -0.01 S  
Min: -2.76 m/s  
TMin: 0.07 S  
VEL@IMP: 6.723 m/s

Max: 4,790.57 N  
TMax: 0.11 S  
Min: -3,432.16 N  
TMin: 0.01 S

Energy: 10.30 J
- **HEAD FORM IMPACT (6.69 m/s)**
  - Test Date: 9-29-2011
  - Vehicle: 2012 Bluebird All American D3 RE
  - NHTSA #: CC0901
  - speed trap: 6.66 m/s
  - Location: S2H12

- **Max**: 94.14 G's
  - **TMax**: 0.11 S
  - **Min**: -67.54 G's
  - **TMin**: 0.01 S

- **HEAD X ACCELERATION (G's) VS TIME (S)**
  - **Hic**: 156.56
  - **T1**: 103.40 ms
  - **T2**: 106.70 ms

- **Max**: 6.69 m/s
  - **TMax**: -0.01 S
  - **Min**: -2.81 m/s
  - **TMin**: 0.07 S
  - **VEL@IMP**: 6.65 m/s

- **FORCE X (N) VS TIME (S)**
  - **Max**: 4,811.45 N
  - **TMax**: 0.11 S
  - **Min**: -3,452.19 N
  - **TMin**: 0.01 S

- **ENERGY**: 9.92 J
  - **TIME**: 182
HEAD FORM IMPACT (6.69 m/s)  
Vehicle: 2012 Bluebird All American D3 RE  
NHTSA #: CC0901  speed trap: 6.69 m/s  
Location: S2H13

Test Date: 9-29-2011

HEAD X ACCELERATION (G's) VS TIME (S)  
Hic: 233.18  T1: 11.20 ms  T2: 18.60 ms

Max: 63.25 G's  
TMax: 0.12 S  
Min: -79.49 G's  
TMin: 0.01 S

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

Max: 7.32 m/s  
TMax: -0.01 S  
Min: -1.67 m/s  
TMin: 0.06 S  
VEL@IMP: 7.321 m/s

FORCE X (N) VS TIME (S)

Max: 3,232.53 N  
TMax: 0.12 S  
Min: -4,062.87 N  
TMin: 0.01 S

Energy: 14.02 J
HEAD FORM IMPACT (6.69 m/s)  
Test Date: 9-29-2011  
Vehicle: 2012 Bluebird All American D3 RE  
NHTSA #: CC0901  
Location: S2H14  

**HEAD X ACCELERATION (G's) VS TIME (S)**  
Max: 63.99 G's  
TMax: 0.11 S  
Min: -80.95 G's  
TMin: 0.01 S  
Hic: 226.30 T1: 9.80 ms T2: 16.60 ms

**VELOCITY X (m/s) VS TIME (S)**  
Max: 6.63 m/s  
TMax: -0.01 S  
Min: -2.65 m/s  
TMin: 0.05 S  
VEL@IMP: 6.577 m/s

**FORCE X (N) VS TIME (S)**  
Max: 3,270.78 N  
TMax: 0.11 S  
Min: -4,137.14 N  
TMin: 0.01 S

**FORCE (N) VS TIME (SEC)**  
Energy: 11.23 J
HEAD FORM IMPACT (6.69 m/s)  
Test Date: 10-14-2011  
Vehicle: 2012 Bluebird All American D3 RE  
NHTSA#: CC0901  
speed trap: 6.63 m/s  
Location: S7H8  

**HEAD X ACCELERATION (G's) VS TIME (S)**  
Hic: 151.23  
T1: 6.40 ms  
T2: 13.20 ms  
Max: 2.91 G's  
TMax: 0.08 S  
Min: -77.95 G's  
TMin: 0.01 S

**VELOCITY X (m/s) VS TIME (S)**  
Max: 6.79 m/s  
TMax: -0.01 S  
Min: -2.95 m/s  
TMin: 0.06 S  
VEL@IMP: 6.748 m/s

**FORCE X (N) VS TIME (S)**  
Max: 148.56 N  
TMax: 0.08 S  
Min: -3,984.21 N  
TMin: 0.01 S

**ENERGY (J) VS TIME (SEC)**  
Energy: 7.08 J
HEAD FORM IMPACT (6.69 m/s)  
Test Date: 10-14-2011  
Vehicle: 2012 Bluebird All American D3 RE  
NHTSA #: CC0901  
Location: S7H9

Max: 3.73 G’s  
TMax: 0.08 S  
Min: -75.16 G’s  
TMin: 0.01 S

Max: 6.83 m/s  
TMax: -0.01 S  
Min: -2.93 m/s  
TMin: 0.06 S  
VEL@IMP: 6.799 m/s

Max: 190.74 N  
TMax: 0.08 S  
Min: -3,841.30 N  
TMin: 0.01 S

Energy: 7.01 J
HEAD FORM IMPACT (6.69 m/s) Test Date: 10-14-2011
Vehicle: 2012 Bluebird All American D3 RE NHTSA#: CC0901 speed trap: 6.63 m/s Location: S7H10

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

- Max: 3.66 G's
- Tmax: 0.08 S
- Min: -67.74 G's
- Tmin: 0.01 S

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

- Max: 6.80 m/s
- Tmax: -0.01 S
- Min: -3.08 m/s
- Tmin: 0.05 S

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

- Max: 187.19 N
- Tmax: 0.08 S
- Min: -3,462.02 N
- Tmin: 0.01 S

**FORCE (N) VS TIME (SEC)**

- Energy: 6.56 J
HEAD FORM IMPACT (6.69 m/s)  
Test Date: 10-14-2011  
Vehicle: 2012 Bluebird All American D3 RE  
NHTSA#: CC0901  
speed trap: 6.68 m/s  
Location: S7H11

HEAD X ACCELERATION (G's) VS TIME (S)  
Hic: 130.67  
T1: 7.60 ms  
T2: 15.60 ms  
Max: 1.54 G's  
TMax: 0.08 S  
Min: -64.69 G's  
TMin: 0.01 S

VELOCITY X (m/s) VS TIME (S)  
Max: 6.87 m/s  
TMax: -0.01 S  
Min: -2.71 m/s  
TMin: 0.07 S  
VEL@IMP: 6.827 m/s

FORCE X (N) VS TIME (S)  
Max: 78.76 N  
TMax: 0.08 S  
Min: -3,306.15 N  
TMin: 0.01 S

ENERGY: 9.05 J
HEAD FORM IMPACT (6.69 m/s)  Test Date: 10-14-2011
Vehicle: 2012 Bluebird All American D3 RE
NHTSA#: CC0901  speed trap: 6.66 m/s  Location: S7H12

**HEAD X ACCELERATION (G's) VS TIME (S)**
- Max: 3.52 G's
- Tmax: 0.08 S
- Min: -76.45 G's
- Tmin: 0.01 S

**VELOCITY X (m/s) VS TIME (S)**
- Max: 6.75 m/s
- Tmax: -0.01 S
- Min: -3.04 m/s
- Tmin: 0.05 S
- Vel@IMP: 6.719 m/s

**FORCE X (N) VS TIME (S)**
- Max: 179.66 N
- Tmax: 0.08 S
- Min: -3,907.12 N
- Tmin: 0.01 S

**ENERGY**
- Energy: 7.35 J
HEAD FORM IMPACT (6.69 m/s)  Test Date: 10-14-2011
Vehicle: 2012 Bluebird All American D3 RE  NHTSA#: CC0901  speed trap: 6.68 m/s  Location: S7H13

Max: 1.86 G's  Tmax: 0.08 S  Min: -79.77 G's  Tmin: 0.01 S

Max: 6.80 m/s  Tmax: -0.01 S  Min: -2.51 m/s  Tmin: 0.06 S  Vel@Imp: 6.76 m/s

Max: 95.19 N  Tmax: 0.08 S  Min: -4,077.09 N  Tmin: 0.01 S

Energy: 12.06 J

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

vel@imp: 6.76 m/s

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

Force x (N) vs time (s)

Force (N) vs time (sec)

HIC: 245.03  T1: 10.40 ms  T2: 17.70 ms

Max: 1.86 G's  Tmax: 0.08 S  Min: -79.77 G's  TMin: 0.01 S

Max: 6.80 m/s  Tmax: -0.01 S  Min: -2.51 m/s  TMin: 0.06 S  Vel@Imp: 6.76 m/s

Max: 95.19 N  Tmax: 0.08 S  Min: -4,077.09 N  TMin: 0.01 S

Energy: 12.06 J
HEAD FORM IMPACT (6.69 m/s) Test Date: 10-14-2011
Vehicle: 2012 Bluebird All American D3 RE
NHTSA#: CC0901 speed trap: 6.70 m/s Location: S7H14

Max: 2.74 G's
TMax: 0.08 S
Min: -78.21 G's
TMin: 0.01 S

Max: 6.84 m/s
TMax: -0.01 S
Min: -2.56 m/s
TMin: 0.05 S
VEL@IMP: 6.812 m/s

Max: 140.29 N
TMax: 0.08 S
Min: -3,997.20 N
TMin: 0.01 S

Energy: 9.94 J
HEAD FORM IMPACT (6.69 m/s)  Test Date: 10-19-2011
Vehicle: 2012 Bluebird All American D3 RE  speed trap: 6.66 m/s
NHTSA #: CC0901  Location: S15H8

Max: 84.53 G's
TMax: 0.08 S
Min: -57.22 G's
TMin: 0.01 S

Max: 7.04 m/s
TMax: -0.01 S
Min: -3.44 m/s
TMin: 0.06 S
VEL@IMP: 7.009 m/s

Max: 4,320.56 N
TMax: 0.08 S
Min: -2,924.69 N
TMin: 0.01 S

Energy: 7.86 J
HEAD FORM IMPACT (6.69 m/s)

Test Date: 10-19-2011
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901  speed trap:  6.66 m/s
Location: S15H9

Max: 4.05 G's
TMax: 0.07 S
Min: -63.84 G's
TMin: 0.01 S

Max: 6.97 m/s
TMax: -0.01 S
Min: -3.40 m/s
TMin: 0.06 S
VEL@IMP: 6.93 m/s

Max: 207.05 N
TMax: 0.07 S
Min: -3,262.77 N
TMin: 0.01 S

Energy: 8.34 J
HEAD FORM IMPACT (6.69 m/s)  Test Date: 10-19-2011
Vehicle: 2012 Bluebird All American D3 RE  Location: S15H10
NHTSA #: CC0901  speed trap: 6.64 m/s

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

Max: 4.36 G's
TMax: 0.07 S
Min: -70.61 G's
TMin: 0.01 S

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

Max: 6.97 m/s
TMax: -0.01 S
Min: -3.29 m/s
TMin: 0.06 S
VEL@IMP: 6.933 m/s

FORCE X (N) VS TIME (S)

Max: 222.62 N
TMax: 0.07 S
Min: -3,608.87 N
TMin: 0.01 S

FORCE (N) VS TIME (SEC)

Energy: 8.42 J
HEAD FORM IMPACT (6.69 m/s)
Test Date: 10-19-2011
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901 speed trap: 6.62 m/s
Location: S15H12

HEAD X ACCELERATION (G's) VS TIME (S)
Hic: 129.19 T1: 10.00 ms T2: 20.20 ms
Max: 3.57 G's TMax: 0.08 S Min: -59.00 G's Tmin: 0.01 S

VELOCITY X (m/s) VS TIME (S)
Max: 6.67 m/s TMax: -0.01 S Min: -3.17 m/s Tmin: 0.06 S VEL@IMP: 6.63 m/s

FORCE X (N) VS TIME (S)
Max: 182.55 N TMax: 0.08 S Min: -3,015.38 N Tmin: 0.01 S

Energy: 12.51 J
HEAD FORM IMPACT (6.69 m/s)  
Test Date: 10-19-2011  
Vehicle: 2012 Bluebird All American D3 RE  
NHTSA #: CC0901  speed trap: 6.69 m/s  
Location: S15H13

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

- Max: 3.09 G's
- Tmax: 0.08 S
- Min: -67.08 G's
- Tmin: 0.01 S

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

- Max: 6.86 m/s
- Tmax: -0.01 S
- Min: -2.85 m/s
- Tmin: 0.06 S

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

- Max: 157.84 N
- Tmax: 0.08 S
- Min: -3,428.37 N
- Tmin: 0.01 S

**FORCE (N) VS TIME (SEC)**

Energy: 9.92 J
HEAD FORM IMPACT (6.69 m/s) Test Date: 10-19-2011
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901 speed trap: 6.69 m/s Location: S15H14

Max: 6.90 m/s TMax: -0.01 S
Min: -2.89 m/s TMin: 0.06 S
VEL@IMP: 6.862 m/s

Max: 96.74 N TMax: 0.07 S
Min: -3,296.94 N TMin: 0.02 S
Hic: 168.89 T1: 11.80 ms T2: 20.80 ms

Energy: 14.74 J
HEAD FORM IMPACT (6.69 m/s) Test Date: 9-21-11
Vehicle: 2012 Bluebird All American D3 RE NHTSA #: CC0901 Speed Trap: 6.66 m/s Location: B6H8

Max: 1.86 G's TMax: 0.08 S Min: -82.30 G's Tmin: 0.01 S

Max: 6.80 m/s TMax: -0.01 S Min: -2.92 m/s Tmin: 0.06 S VEL@IMP: 6.773 m/s

Max: 95.26 N TMax: 0.08 S Min: -4,206.27 N Tmin: 0.01 S

Energy: 7.70 J
HEAD FORM IMPACT (6.69 m/s) Test Date: 9-21-11
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901 Speed Trap: 6.66 m/s Location: B6H9

HEAD X ACCELERATION (G's) VS TIME (S) 
Max: 1.18 G's
TMax: 0.08 S
Min: -90.16 G's
TMin: 0.01 S
Hic: 154.91 T1: 7.00 ms T2: 10.90 ms

VELOCITY X (m/s) VS TIME (S)
Max: 6.72 m/s
TMax: -0.01 S
Min: -3.16 m/s
TMin: 0.06 S
VEL@IMP: 6.702 m/s

FORCE X (N) VS TIME (S)
Max: 60.23 N
TMax: 0.08 S
Min: -4,608.06 N
TMin: 0.01 S

Energy: 7.53 J
HEAD FORM IMPACT (6.69 m/s)  Test Date: 9-21-11

Vehicle: 2012 Bluebird All American D3 RE  Location: B6H10
NHTSA #: CC0901  speed trap: 6.69 m/s

Max: 1.02 G's  Tmax: 0.07 S  Min: -66.01 G's  Tmin: 0.01 S

Max: 6.76 m/s  Tmax: -0.01 S  Min: -3.38 m/s  Tmin: 0.06 S  Vel@IMP: 6.739 m/s

Max: 51.89 N  Tmax: 0.07 S  Min: -3,373.89 N  Tmin: 0.01 S

Energy: 7.60 J
HEAD FORM IMPACT (6.69 m/s) Test Date: 9-21-11
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901 speed trap: 6.66 m/s Location: B6H11

Max: 1.29 G's
TMax: 0.08 S
Min: -81.72 G's
TMin: 0.01 S

Max: 6.81 m/s
TMax: -0.01 S
Min: -2.70 m/s
TMin: 0.06 S
VEL@IMP: 6.788 m/s

Max: 66.09 N
TMax: 0.08 S
Min: -4,176.69 N
TMin: 0.01 S

Energy: 9.41 J
HEAD FORM IMPACT (6.69 m/s)  
Test Date: 9-21-2011
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901  
Speed Trap: 6.69  
Location: B6H12

Max: 1.66 G's  
TMax: 0.08 S  
Min: -70.15 G's  
TMin: 0.01 S

Max: 6.74 m/s  
TMax: -0.01 S  
Min: -3.13 m/s  
TMin: 0.06 S  
VEL@IMP: 6.705 m/s

Max: 84.81 N  
TMax: 0.08 S  
Min: -3,585.46 N  
TMin: 0.01 S

Energy: 7.79 J
HEAD FORM IMPACT (6.69 m/s)  Test Date: 9-21-2011
Vehicle: 2012 Bluebird All American D3 RE  Location: B6H14
NHTSA #: CC0901  Speed Trap: 6.65 m/s

Max: 0.82 G's  Tmax: 0.07 S  Min: -81.01 G's  Tmin: 0.01 S

Max: 6.69 m/s  Tmax: -0.01 S  Min: -2.36 m/s  Tmin: 0.06 S  Vel@Imp: 6.643 m/s

Max: 41.82 N  Tmax: 0.07 S  Min: -4,140.61 N  Tmin: 0.01 S

Energy: 8.62 J
HEAD FORM IMPACT (6.69 m/s)
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901 Speed Trap: 6.67 m/s
Location: B6H15

Test Date: 9-21-11

Max: 84.64 G's
TMax: 0.10 S
Min: -92.27 G's
TMin: 0.01 S

Max: 6.71 m/s
TMax: -0.01 S
Min: -2.53 m/s
TMin: 0.06 S
VEL@IMP: 6.658 m/s

Max: 4,325.88 N
TMax: 0.10 S
Min: -4,715.69 N
TMin: 0.01 S

Energy: 6.75 J
HEAD FORM IMPACT (6.69 m/s) Test Date: 10-20-2011
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901 speed trap: 6.63 m/s Location: B18H8

Max: 4.09 G's
TMax: 0.09 S
Min: -62.05 G's
TMin: 0.01 S

Max: 6.84 m/s
TMax: -0.01 S
Min: -3.27 m/s
TMin: 0.07 S
VEL@IMP: 6.803 m/s

Max: 209.18 N
TMax: 0.09 S
Min: -3,171.25 N
TMin: 0.01 S

Energy: 7.52 J
HEAD FORM IMPACT (6.69 m/s)  
Test Date: 10-21-2011
Vehicle: 2012 Bluebird All American D3 RE  
NHTSA #: CC0901  speed trap: 6.61 m/s  
Location: B18H9

**HEAD X ACCELERATION (G's) VS TIME (S)**  
Max: 4.56 G's  
TMax: 0.08 S  
Min: -72.30 G's  
TMin: 0.01 S

**VELOCITY X (m/s) VS TIME (S)**  
Max: 6.81 m/s  
TMax: -0.01 S  
Min: -3.21 m/s  
TMin: 0.07 S  
VEL@IMP: 6.764 m/s

**FORCE X (N) VS TIME (S)**  
Max: 233.20 N  
TMax: 0.08 S  
Min: -3,695.07 N  
TMin: 0.01 S

Energy: 7.98 J
HEAD FORM IMPACT (6.69 m/s)  
Test Date: 10-21-2011  
Vehicle: 2012 Bluebird All American D3 RE  
NHTSA #: CC0901  
speed trap: 6.61 m/s  
Location: B18H10

HEAD X ACCELERATION (G's) VS TIME (S)  
Max: 4.33 G's  
TMax: 0.08 S  
Min: -92.54 G's  
TMin: 0.01 S  

VELLOCITY X (m/s) VS TIME (S)  
Max: 6.76 m/s  
TMax: -0.01 S  
Min: -3.14 m/s  
TMin: 0.07 S  
VEL@IMP: 6.713 m/s

FORCE X (N) VS TIME (S)  
Max: 221.50 N  
TMax: 0.08 S  
Min: -4,729.74 N  
TMin: 0.01 S

ENERGY: 8.10 J
HEAD FORM IMPACT (6.69 m/s)  Test Date: 10-21-2011
Vehicle: 2012 Bluebird All American D3 RE  Location: B18H11
NHTSA #: CC0901  speed trap: 6.61 m/s

**HEAD X ACCELERATION (G's) VS TIME (S)**
- Max: 1.08 G's
- Tmax: 0.08 S
- Min: -63.97 G's
- Tmin: 0.01 S

**VELOCITY X (m/s) VS TIME (S)**
- Max: 7.03 m/s
- Tmax: -0.01 S
- Min: -2.53 m/s
- Tmin: 0.07 S

**FORCE X (N) VS TIME (S)**
- Max: 55.37 N
- Tmax: 0.08 S
- Min: -3,269.60 N
- Tmin: 0.01 S

**ENERGY VS TIME (SEC)**
- Energy: 8.70 J
HEAD FORM IMPACT (6.69 m/s)  
Test Date: 10-21-2011  
Vehicle: 2012 Bluebird All American D3 RE  
NHTSA #: CC0901  speed trap: 6.63 m/s  
Location: B18H12  

**HEAD X ACCELERATION (G's) VS TIME (S)**  
Max: 3.59 G's  
TMax: 0.08 S  
Min: -94.89 G's  
TMin: 0.01 S  
Hic: 225.40  
T1: 8.00 ms  
T2: 12.70 ms  

**VELOCITY X (m/s) VS TIME (S)**  
Max: 6.92 m/s  
TMax: -0.01 S  
Min: -2.68 m/s  
TMin: 0.07 S  
VEL@IMP: 6.874 m/s  

**FORCE X (N) VS TIME (S)**  
Max: 183.35 N  
TMax: 0.08 S  
Min: -4,849.99 N  
TMin: 0.01 S  

**ENERGY**  
Energy: 9.12 J
HEAD FORM IMPACT (6.69 m/s)  
Test Date: 10-21-2011  
Vehicle: 2012 Bluebird All American D3 RE  
NHTSA #: CC0901  
speed trap: 6.61 m/s  
Location: B18H13

HEAD X ACCELERATION (G's) VS TIME (S)
Max: 1.90 G's  
TMax: 0.08 S  
Min: -88.79 G’s  
TMin: 0.01 S  
Hic: 199.96  
T1: 6.90 ms  
T2: 12.20 ms

VELOCITY X (m/s) VS TIME (S)
Max: 6.77 m/s  
TMax: -0.01 S  
Min: -2.56 m/s  
TMin: 0.07 S  
VEL@IMP: 6.748 m/s

FORCE X (N) VS TIME (S)
Max: 97.22 N  
TMax: 0.08 S  
Min: -4,537.83 N  
TMin: 0.01 S

ENERGY: 7.51 J

FORCE (N) VS TIME (SEC)
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901 speed trap: 4.88 m/s

Test Date: 9-28-2011
Location: S2K1

Head X Acceleration (G's) VS TIME (S)
Max: 23.80 G's
TMax: 0.02 s
Min: -38.52 G's
TMin: 0.17 s

VELOCITY X (m/s) VS TIME (S)
Max: 5.12 m/s
TMax: 0.13 s
Min: -1.31 m/s
TMin: 0.22 s
VEL@IMP: 5.09 m/s

FORCE X (N) VS TIME (S)
Max: 1,057.54 N
TMax: 0.02 s
Min: -1,711.98 N
TMin: 0.17 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901 speed trap: 4.89 m/s
Test Date: 9-28-2011
Location: S2K2

Head X Acceleration (G's) VS TIME (S)
Max: 23.89 G's
TMax: 0.02 s
Min: -39.77 G's
TMin: 0.17 s

VELOCITY X (m/s) VS TIME (S)
Max: 5.15 m/s
TMax: 0.13 s
Min: -1.29 m/s
TMin: 0.22 s
VEL@IMP: 5.12 m/s

FORCE X (N) VS TIME (S)
Max: 1,061.46 N
TMax: 0.02 s
Min: -1,767.35 N
TMin: 0.17 s
Head X Acceleration (G's) VS TIME (S)
Max: 21.95 G's
TMax: 0.02 s
Min: -42.45 G's
TMin: 0.17 s

VELOCITY X (m/s) VS TIME (S)
Max: 5.06 m/s
TMax: 0.13 s
Min: -1.44 m/s
TMin: 0.21 s
VEL@IMP: 5.01 m/s

FORCE X (N) VS TIME (S)
Max: 975.49 N
TMax: 0.02 s
Min: -1,886.24 N
TMin: 0.17 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901 speed trap: 4.89 m/s
Test Date: 9-28-2011
Location: S2K4

Head X Acceleration (G's) VS TIME (S)
Max: 24.36 G's
TMax: 0.02 s
Min: -49.51 G's
TMin: 0.16 s

VELOCITY X (m/s) VS TIME (S)
Max: 5.00 m/s
TMax: 0.12 s
Min: -1.53 m/s
TMin: 0.20 s
VEL@IMP: 4.93 m/s

FORCE X (N) VS TIME (S)
Max: 1,082.51 N
TMax: 0.02 s
Min: -2,200.31 N
TMin: 0.16 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901 speed trap: 4.81 m/s
Location: S2K5
Test Date: 9-28-2011

Head X Acceleration (G's) VS TIME (S)
Max: 23.71 G's
TMax: 0.02 s
Min: -42.57 G's
TMin: 0.17 s

VELOCITY X (m/s) VS TIME (S)
Max: 5.02 m/s
TMax: 0.12 s
Min: -1.54 m/s
TMin: 0.19 s
VEL@IMP: 4.95 m/s

FORCE X (N) VS TIME (S)
Max: 1,053.57 N
TMax: 0.02 s
Min: -1,891.57 N
TMin: 0.17 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901 speed trap: 4.81 m/s

Test Date: 9-28-2011
Location: S2K6

Head X Acceleration (G's) VS TIME (S)
Max: 22.46 G's
TMax: 0.02 s
Min: -47.25 G's
TMin: 0.16 s

VELOCITY X (m/s) VS TIME (S)
Max: 5.03 m/s
TMax: 0.13 s
Min: -1.42 m/s
TMin: 0.20 s
VEL@IMP: 4.96 m/s

FORCE X (N) VS TIME (S)
Max: 998.11 N
TMax: 0.02 s
Min: -2,099.63 N
TMin: 0.16 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901 speed trap: 4.80 m/s
Test Date: 9-29-2011
Location: S2K7

Head X Acceleration (G's) VS TIME (S)
Max: 22.25 G's
TMax: 0.02 s
Min: -46.73 G's
TMin: 0.16 s

VELOCITY X (m/s) VS TIME (S)
Max: 4.99 m/s
TMax: 0.13 s
Min: -1.52 m/s
TMin: 0.19 s
VEL@IMP: 4.92 m/s

FORCE X (N) VS TIME (S)
Max: 988.90 N
TMax: 0.02 s
Min: -2,076.55 N
TMin: 0.16 s
FMVSS 222 KNEE FORM IMPACTS  
Vehicle: 2012 Bluebird All American D3 RE  
NHTSA #: CC0901  speed trap: 4.80 m/s  
Test Date: 9-29-2011  Location: S2K8

Head X Acceleration (G's) VS TIME (S)
Max: 23.93 G's  
TMax: 0.02 s  
Min: -55.88 G's  
TMin: 0.16 s

VELOCITY X (m/s) VS TIME (S)
Max: 5.00 m/s  
TMax: 0.12 s  
Min: -1.20 m/s  
TMin: 0.18 s  
VEL@IMP: 4.92 m/s

FORCE X (N) VS TIME (S)
Max: 1,063.26 N  
TMax: 0.02 s  
Min: -2,483.20 N  
TMin: 0.16 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901  speed trap:  4.89 m/s
Test Date: 10-13-2011
Location: S7K1

Head X Acceleration (G's) VS TIME (S)
Max: 22.66 G's
TMax: 0.02 s
Min: -60.90 G's
TMin: 0.16 s

VELOCITY X (m/s) VS TIME (S)
Max: 4.82 m/s
TMax: 0.12 s
Min: -1.88 m/s
TMin: 0.20 s
VEL@IMP: 4.69 m/s

FORCE X (N) VS TIME (S)
Max: 1,007.18 N
TMax: 0.02 s
Min: -2,706.24 N
TMin: 0.16 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901  Speed Trap: 4.92 m/s
Location: S7K2

Test Date: 10-13-2011

Head X Acceleration (G's) VS TIME (S)
Max: 24.67 G's
TMax: 0.02 s
Min: -57.63 G's
TMin: 0.16 s

VELOCITY X (m/s) VS TIME (S)
Max: 5.09 m/s
TMax: 0.12 s
Min: -1.47 m/s
TMin: 0.21 s
VEL@IMP: 5.03 m/s

FORCE X (N) VS TIME (S)
Max: 1,096.12 N
TMax: 0.02 s
Min: -2,561.08 N
TMin: 0.16 s
FMVSS 222 KNEE FORM IMPACTS
Test Date: 10-14-2011
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901 speed trap: 4.88 m/s
Location: S7K3

**Head X Acceleration (G's) VS TIME (S)**
- Max: 22.25 G's
- Tmax: 0.02 s
- Min: -45.92 G's
- Tmin: 0.17 s

**VELOCITY X (m/s) VS TIME (S)**
- Max: 4.96 m/s
- Tmax: 0.12 s
- Min: -1.66 m/s
- Tmin: 0.21 s
- Vel@Imp: 4.86 m/s

**FORCE X (N) VS TIME (S)**
- Max: 988.62 N
- Tmax: 0.02 s
- Min: -2,040.49 N
- Tmin: 0.17 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901  speed trap: 4.90 m/s
Test Date: 10-14-2011
Location: S7K4

Head X Acceleration (G's) VS TIME (S)
Max: 22.19 G's
TMax: 0.02 s
Min: -43.61 G's
TMin: 0.16 s

VELOCITY X (m/s) VS TIME (S)
Max: 5.04 m/s
TMax: 0.12 s
Min: -1.52 m/s
TMin: 0.21 s
VEL@IMP: 4.97 m/s

FORCE X (N) VS TIME (S)
Max: 986.00 N
TMax: 0.02 s
Min: -1,938.10 N
TMin: 0.16 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901 speed trap: 4.86 m/s
Test Date: 10-14-2011
Location: S7K5

Head X Acceleration (G's) VS TIME (S)
Max: 24.41 G's
TMax: 0.02 s
Min: -45.46 G's
TMin: 0.17 s

VELOCITY X (m/s) VS TIME (S)
Max: 5.12 m/s
TMax: 0.12 s
Min: -1.31 m/s
TMin: 0.21 s
VEL@IMP: 5.06 m/s

FORCE X (N) VS TIME (S)
Max: 1,084.65 N
TMax: 0.02 s
Min: -2,020.00 N
TMin: 0.17 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901  speed trap: 4.83 m/s

Test Date: 10-14-2011
Location: S7K6

Head X Acceleration (G's) VS TIME (S)
Max: 22.51 G's
TMax: 0.02 s
Min: -46.04 G's
TMin: 0.17 s

VELOCITY X (m/s) VS TIME (S)
Max: 4.97 m/s
TMax: 0.13 s
Min: -1.47 m/s
TMin: 0.21 s
VEL@IMP: 4.89 m/s

FORCE X (N) VS TIME (S)
Max: 1,000.31 N
TMax: 0.02 s
Min: -2,045.91 N
TMin: 0.17 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901    speed trap: 4.81 m/s

Test Date: 10-14-2011    Location: S7K7

Head X Acceleration (G's) VS TIME (S)
Max: 23.02 G's
TMax: 0.02 s
Min: -46.39 G's
TMin: 0.16 s

VELOCITY X (m/s) VS TIME (S)
Max: 4.84 m/s
TMax: 0.12 s
Min: -1.63 m/s
TMin: 0.20 s
VEL@IMP: 4.74 m/s

FORCE X (N) VS TIME (S)
Max: 1,023.12 N
TMax: 0.02 s
Min: -2,061.75 N
TMin: 0.16 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901 speed trap: 4.83 m/s
Test Date: 10-14-2011
Location: S7K8

Head X Acceleration (G's) VS TIME (S)
Max: 21.85 G's
TMax: 0.02 s
Min: -51.64 G's
TMin: 0.16 s

VELOCITY X (m/s) VS TIME (S)
Max: 4.79 m/s
TMax: 0.12 s
Min: -1.74 m/s
TMin: 0.19 s
VEL@IMP: 4.69 m/s

FORCE X (N) VS TIME (S)
Max: 971.22 N
TMax: 0.02 s
Min: -2,294.81 N
TMin: 0.16 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901    speed trap: 4.91 m/s
Test Date: 10-18-2011
Location: S15K1

Head X Acceleration (G's) VS TIME (S)
Max: 21.21 G's
TMax: 0.02 s
Min: -47.26 G's
TMin: 0.16 s

VELOCITY X (m/s) VS TIME (S)
Max: 5.07 m/s
TMax: 0.12 s
Min: -1.66 m/s
TMin: 0.20 s
VEL@IMP: 5.03 m/s

FORCE X (N) VS TIME (S)
Max: 942.46 N
TMax: 0.02 s
Min: -2,100.16 N
TMin: 0.16 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901 speed trap: 4.91 m/s
Test Date: 10-19-2011
Location: S15K2

Head X Acceleration (G's) VS TIME (S)
Max: 22.90 G's
TMax: 0.02 s
Min: -48.07 G's
TMin: 0.17 s

VELOCITY X (m/s) VS TIME (S)
Max: 5.04 m/s
TMax: 0.12 s
Min: -1.70 m/s
TMin: 0.20 s
VEL@IMP: 4.98 m/s

FORCE X (N) VS TIME (S)
Max: 1,017.78 N
TMax: 0.02 s
Min: -2,136.15 N
TMin: 0.17 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901 speed trap: 4.92 m/s
Test Date: 10-19-2011
Location: S15K4

Head X Acceleration (G's) VS TIME (S)
Max: 24.44 G's
TMax: 0.02 s
Min: -48.70 G's
TMin: 0.16 s

VELOCITY X (m/s) VS TIME (S)
Max: 5.13 m/s
TMax: 0.12 s
Min: -1.71 m/s
TMin: 0.19 s
VEL@IMP: 5.08 m/s

FORCE X (N) VS TIME (S)
Max: 1,086.13 N
TMax: 0.02 s
Min: -2,164.03 N
TMin: 0.16 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901 speed trap: 4.84 m/s

Test Date: 10-18-2011
Location: S15K5

Head X Acceleration (G's) VS TIME (S)
Max: 22.72 G's
TMax: 0.02 s
Min: -46.31 G's
TMin: 0.16 s

VELOCITY X (m/s) VS TIME (S)
Max: 4.99 m/s
TMax: 0.13 s
Min: -1.60 m/s
TMin: 0.19 s
VEL@IMP: 4.94 m/s

FORCE X (N) VS TIME (S)
Max: 1,009.77 N
TMax: 0.02 s
Min: -2,057.92 N
TMin: 0.16 s
FMVSS 222 KNEE FORM IMPACTS

Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901  speed trap: 4.84 m/s

Location: S15K6

Test Date: 10-18-2011

Head X Acceleration (G's) VS TIME (S)
- Max: 23.48 G's
- Tmax: 0.02 s
- Min: -44.20 G's
- Tmin: 0.16 s

VELOCITY X (m/s) VS TIME (S)
- Max: 4.93 m/s
- Tmax: 0.12 s
- Min: -1.74 m/s
- Tmin: 0.20 s
- Vel@IMP: 4.86 m/s

FORCE X (N) VS TIME (S)
- Max: 1,043.29 N
- Tmax: 0.02 s
- Min: -1,964.08 N
- Tmin: 0.16 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901 speed trap: 4.81 m/s
Test Date: 10-19-2011
Location: S15K7

Head X Acceleration (G's) VS TIME (S)
Max: 23.69 G's
TMax: 0.02 s
Min: -50.94 G's
TMin: 0.17 s

VELOCITY X (m/s) VS TIME (S)
Max: 4.96 m/s
TMax: 0.12 s
Min: -1.81 m/s
TMin: 0.19 s
VEL@IMP: 4.88 m/s

FORCE X (N) VS TIME (S)
Max: 1,052.63 N
TMax: 0.02 s
Min: -2,263.82 N
TMin: 0.17 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901  speed trap: 4.82 m/s

Test Date: 10-19-2011
Location: S15K8

Head X Acceleration (G's) VS TIME (S)
Max: 22.64 G's
TMax: 0.02 s
Min: -46.87 G's
TMin: 0.17 s

VELOCITY X (m/s) VS TIME (S)
Max: 4.97 m/s
TMax: 0.12 s
Min: -2.06 m/s
TMin: 0.19 s
VEL@IMP: 4.9 m/s

FORCE X (N) VS TIME (S)
Max: 1,006.11 N
TMax: 0.02 s
Min: -2,083.08 N
TMin: 0.17 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901 speed trap: 4.88 m/s

Test Date: 9-20-11
Location: B6K1

Head X Acceleration (G's) VS TIME (S)
- Max: 22.68 G's
- Tmax: 0.02 s
- Min: -44.19 G's
- Tmin: 0.16 s

VELOCITY X (m/s) VS TIME (S)
- Max: 4.99 m/s
- Tmax: 0.12 s
- Min: -1.79 m/s
- Tmin: 0.18 s
- Vel@IMP: 4.91 m/s

FORCE X (N) VS TIME (S)
- Max: 1,008.10 N
- Tmax: 0.02 s
- Min: -1,963.59 N
- Tmin: 0.16 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901  speed trap: 4.90 m/s
Test Date: 9-20-11  Location: B6K2

Head X Acceleration (G's) VS TIME (S)
Max: 25.17 G's
TMax: 0.02 s
Min: -43.48 G's
TMin: 0.16 s

VELOCITY X (m/s) VS TIME (S)
Max: 4.83 m/s
TMax: 0.12 s
Min: -1.92 m/s
TMin: 0.19 s
VEL@IMP: 4.72 m/s

FORCE X (N) VS TIME (S)
Max: 1,118.44 N
TMax: 0.02 s
Min: -1,932.11 N
TMin: 0.16 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901 speed trap: 4.86 m/s

Head X Acceleration (G's) VS TIME (S)
Max: 22.42 G's
TMax: 0.02 s
Min: -44.98 G's
TMin: 0.16 s

VELOCITY X (m/s) VS TIME (S)
Max: 5.03 m/s
TMax: 0.12 s
Min: -1.47 m/s
TMin: 0.19 s
VEL@IMP: 4.97 m/s

FORCE X (N) VS TIME (S)
Max: 996.14 N
TMax: 0.02 s
Min: -1,998.76 N
TMin: 0.16 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901 speed trap: 4.91 m/s

Test Date: 9-20-11
Location: B6K4

Head X Acceleration (G's) VS TIME (S)
Max: 26.23 G's
TMax: 0.02 s
Min: -51.82 G's
TMin: 0.16 s

VELOCITY X (m/s) VS TIME (S)
Max: 5.07 m/s
TMax: 0.12 s
Min: -1.34 m/s
TMin: 0.19 s
VEL@IMP: 5.01 m/s

FORCE X (N) VS TIME (S)
Max: 1,165.64 N
TMax: 0.02 s
Min: -2,302.66 N
TMin: 0.16 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901  speed trap: 4.83 m/s
Test Date: 9-20-11
Location: B6K6

Head X Acceleration (G's) VS TIME (S)
Max: 85.72 G's
TMax: 0.26 s
Min: -35.45 G's
TMin: 0.17 s

VELOCITY X (m/s) VS TIME (S)
Max: 4.77 m/s
TMax: 0.12 s
Min: -2.73 m/s
TMin: 0.20 s
VEL@IMP: 4.66 m/s

FORCE X (N) VS TIME (S)
Max: 3,809.26 N
TMax: 0.26 s
Min: -1,575.23 N
TMin: 0.17 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901  speed trap: 4.82 m/s
Test Date: 9-20-11
Location: B6K7

Head X Acceleration (G's) VS TIME (S)
Max: 67.12 G's
TMax: 0.26 s
Min: -41.61 G's
TMin: 0.17 s

VELOCITY X (m/s) VS TIME (S)
Max: 5.03 m/s
TMax: 0.12 s
Min: -2.11 m/s
TMin: 0.20 s
VEL@IMP: 4.97 m/s

FORCE X (N) VS TIME (S)
Max: 2,982.91 N
TMax: 0.26 s
Min: -1,849.05 N
TMin: 0.17 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901  speed trap: 4.84 m/s

Test Date: 9-20-11
Location: B6K8

VELOCITY X (m/s) VS TIME (S)
Max: 4.79 m/s
TMax: 0.12 s
Min: -2.17 m/s
TMin: 0.19 s
VEL@IMP: 4.68 m/s

FORCE X (N) VS TIME (S)
Max: 1,406.50 N
TMax: 0.26 s
Min: -2,096.11 N
TMin: 0.16 s

Head X Acceleration (G's) VS TIME (S)
Max: 31.65 G's
TMax: 0.26 s
Min: -47.17 G's
TMin: 0.16 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901  speed trap: 4.93 m/s
Test Date: 10-20-2011  Location: B18K1

Head X Acceleration (G's) VS TIME (S)
Max: 22.92 G's
TMax: 0.02 s
Min: -52.91 G's
TMin: 0.16 s

VELOCITY X (m/s) VS TIME (S)
Max: 5.10 m/s
TMax: 0.12 s
Min: -1.05 m/s
TMin: 0.21 s
VEL@IMP: 5.06 m/s

FORCE X (N) VS TIME (S)
Max: 1,018.48 N
TMax: 0.02 s
Min: -2,351.35 N
TMin: 0.16 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901  speed trap: 4.90 m/s
Test Date: 10-20-2011
Location: B18K2

Head X Acceleration (G's) VS TIME (S)
- Max: 23.98 G's
- Tmax: 0.02 s
- Min: -45.83 G's
- Tmin: 0.16 s

Velocity X (m/s) VS TIME (S)
- Max: 5.07 m/s
- Tmax: 0.13 s
- Min: -1.20 m/s
- Tmin: 0.20 s
- VEL@IMP: 5.03 m/s

Force X (N) VS TIME (S)
- Max: 1,065.67 N
- Tmax: 0.02 s
- Min: -2,036.60 N
- Tmin: 0.16 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901          speed trap:  4.89 m/s

Test Date: 10-20-2011
Location: B18K3

Head X Acceleration (G's) VS TIME (S)
Max: 22.91 G's
TMax: 0.02 s
Min: -43.49 G's
TMin: 0.17 s

VELOCITY X (m/s) VS TIME (S)
Max: 4.88 m/s
TMax: 0.12 s
Min: -1.88 m/s
TMin: 0.20 s
VEL@IMP: 4.8 m/s

FORCE X (N) VS TIME (S)
Max: 1,018.27 N
TMax: 0.02 s
Min: -1,932.51 N
TMin: 0.17 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901          speed trap: 4.84 m/s

Location: B18K5

Head X Acceleration (G's) VS TIME (S)
Max: 23.50 G's
TMax: 0.02 s
Min: -43.51 G's
TMin: 0.16 s

VELOCITY X (m/s) VS TIME (S)
Max: 5.06 m/s
TMax: 0.13 s
Min: -1.26 m/s
TMin: 0.20 s
VEL@IMP: 5.02 m/s

FORCE X (N) VS TIME (S)
Max: 1,044.47 N
TMax: 0.02 s
Min: -1,933.63 N
TMin: 0.16 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901  speed trap: 4.85 m/s

Test Date: 10-20-2011  Location: B18K6

Head X Acceleration (G's) VS TIME (S)
Max: 22.58 G’s
TMax: 0.02 s
Min: -46.41 G’s
TMin: 0.16 s

VELOCITY X (m/s) VS TIME (S)
Max: 4.92 m/s
TMax: 0.13 s
Min: -1.35 m/s
TMin: 0.21 s
VEL@IMP: 4.87 m/s

FORCE X (N) VS TIME (S)
Max: 1,003.51 N
TMax: 0.02 s
Min: -2,062.42 N
TMin: 0.16 s
FMVSS 222 KNEE FORM IMPACTS
Vehicle: 2012 Bluebird All American D3 RE
NHTSA #: CC0901 speed trap: 4.80 m/s
Test Date: 10-20-2011
Location: B18K7

Head X Acceleration (G's) VS TIME (S)
Max: 21.96 G's
TMax: 0.02 s
Min: -46.84 G's
TMin: 0.16 s

VELOCITY X (m/s) VS TIME (S)
Max: 5.09 m/s
TMax: 0.13 s
Min: -1.11 m/s
TMin: 0.19 s
VEL@IMP: 5.06 m/s

FORCE X (N) VS TIME (S)
Max: 976.01 N
TMax: 0.02 s
Min: -2,081.75 N
TMin: 0.16 s
SECTION 6 (CONTINUED)

TEST PLOTS

**W4 Wheelchair Anchorage (LF) Force vs. Time**

**W4 Wheelchair Anchorage (LR) Force vs. Time**
SECTION 6 (CONTINUED)

TEST PLOTS

W4 Wheelchair Anchorage (RR) Force vs. Time

Maximum: 26505.76 N @ 35.19 sec
Minimum: 41.20 N @ 0.30 sec

W4 Wheelchair Anchorage (Upper Torso) Force vs. Time

Maximum: 6748.58 N @ 35.80 sec
Minimum: 49.44 N @ 0.23 sec
cCφ9φ1
9.28.2411
$2K^4
4100 mm^3
LABORATORY NOTICE OF TEST FAILURE TO OVSC

Test Procedure: FMVSS 222  
Test Date: 09/14/11  
Test Vehicle: 2012 Blue Bird All American D3 RE  
Test Lab: MGA Research Corp.  
NHTSA No.: CC0901  
Project Engineer: Eric Peschman  
Contract No.: DTNH22-08-D-00075  
Delivery Order No.: 3  
MFR.: Blue Bird  
VIN: 1BABLBPA8CF283351  
Build Date: 12-2010

TEST FAILURE DESCRIPTION

During the restraining barrier force deflection test for Barrier No. B13, the area within the force deflection curve of the upper loading bar failed to meet the minimum requirement of 1,356 joules. The total area was 1,353 Joules. When the force vs. deflection data was plotted, it fell out of the specified corridor listed in 49 CFR 571.222 Figure 1.

FMVSS REQUIREMENTS DESCRIPTION

S5.1.3.4 Apply additional force horizontally in the forward direction through the upper bar until 452W joules of energy have been absorbed in deflecting the seat back (or restraining barrier).

Remarks: No remarks.

Notification to NHTSA (COTR): Lawrence Valvo  
Date: 09/14/11  
By: [Signature]