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May 13, 2011

Mr. Frank Borris, Director
Office of Defects Investigation
National Highway Traffic Safety Administration (NHTSA)
1200 New Jersey Avenue, SE
West Building
Washington, DC 20590

Dear Mr. Borris:

Attached please find two data CD's containing reports, data, photos, and video of the August 5, 2010 Federal Highway Administration 70 MPH rear impact of a 2003 Ford Taurus into a 1995 Ford Explorer with 70% engagement in which the Explorer suffered no breaching of the fuel system or fuel leakage. This was the test which was attended by staff of the Office of Defects Investigations and the Office of Chief Counsel. The 1995 Ford Explorer showed vastly better fuel system integrity than its contemporary peer 1995 Jeep Grand Cherokee given that the Explorer saw a 39 mph velocity change versus a 23 mph velocity change for the Grand Cherokee which had the fuel filler hose separate from the fuel tank. (Please note the one data sheet has an obvious typo for Grand Cherokee in that 37.0 mph should be 37.0 kph as shown in the velocity traces data which are attached.)

Additionally, CAS has uploaded video from the Karco and FHWA data CD's provided to NHTSA during our April 21 meeting. The reports and video from these tests is located on our website at http://www.autosafety.org/jeep-grand-cherokee-crash-tests.

CAS requests that these materials be placed in the investigatory file for PE10-031. Please contact me at 202) 328-7700 or by email at mbrooks@autosafety.org if you have any questions or issues with the enclosed materials.

Sincerely,

Michael Brooks
Staff Attorney

# EXPERIMENTAL TEST OF OCCUPANT ENTRAPMENT

## FORD TAURUS INTO REAR OF FORD EXPLORER

## 30% OFFSET, 70 MPH

**Test Date: August 5, 2010**

**Final Report Date: September 25, 2010**

# SECTION 1

# PURPOSE AND SUMMARY OF TEST

## PURPOSE

The purpose of this 70 mph, 30% offset rear impact test is to examine the occurrence of occupant entrapment in high-speed offset rear impacts.

## SUMMARY

A 1995 Ford Explorer was impacted in the rear by a 2003 Ford Taurus at a velocity of 70 mph. The Explorer and Taurus were set so the right vertical edge of the front of the Taurus would contact the Explorer rear 355.6 mm in right of the Explorer's longitudinal centerline. The test was performed at the Federal Outdoor Impact Laboratory on August 5, 2010.

Three real time cameras and eight high-speed cameras were used to document the rear impact event.

One $50^{th}$ percentile male anthropomorphic test device (ATD) was placed in the driver seating position approximately according to dummy placement instructions specified in the FMVSS 208 Laboratory Indicant Test Procedure.

The ATD was not instrumented for this test.

The 21 channels of data were recorded with an on-board data acquisition system.

As a result of the impact, the driver's side door of the Explorer experienced crush resistance but could be opened after the test. The passenger's side door of the Explorer was fully operational after the test.

## SECTION 2

## OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

## DATA SHEET NO. 1

### BULLET VEHICLE CRASH TEST SUMMARY

Bullet Vehicle: 2003 Ford Taurus
Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10

### BULLET VEHICLE PRIMARY IMPACT DATA

| **Measured Parameter** | **Units** | **Value** |
|---|---|---|
| Bullet Vehicle Velocity At Impact | kph | 109.4 |
| Bullet Vehicle Test Weight | kg | 1414 |
| Bullet Vehicle Maximum Static Crush | mm | 540 |
| Impact Point | mm | NA |

### DOOR OPENING AND SEAT TRACK INFORMATION: BULLET VEHICLE

| Description | Driver | Passenger |
|---|---|---|
| Front Door Opening | Functional | Crush Locked |
| Rear Door Opening | Functional | Crush Resistance |
| Seat Track Shift (mm) | - | - |
| Seat Back Failure (deg) | - | - |

### TEST DUMMY INFORMATION: BULLET VEHICLE

| Description | Driver | Passenger |
|---|---|---|
| Dummy Type | - | - |
| Head Contact | - | - |
| Chest Contact | - | - |
| Abdomen Contact | - | - |
| Left Knee Contact | - | - |
| Right Knee Contact | - | - |

### VIDEO COVERAGE

| | |
|---|---|
| High Speed | 8 |
| Real Time | 3 |
| Total | 11 |

| | |
|---|---|
| Driver ATD Sensors | - |
| Passenger ATD Sensors | - |
| Bullet Vehicle Structure Accelerometers | 9 |
| Target Vehicle Structure Accelerometers | 12 |
| Total | 21 |

## DATA SHEET NO. 2

## GENERAL TEST AND BULLET VEHICLE PARAMETER DATA

Bullet Vehicle: 2003 Ford Taurus
Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10

### BULLET VEHICLE INFORMATION

| | |
|---|---|
| Manufacturer | Ford |
| Model | Taurus |
| Body Style | 4DR Sedan |
| Vehicle No. | 1 |
| VIN | 1FAFP55263A177881 |
| Color | Blue |
| Delivery Date | - |
| Odometer Reading | 131,417 |
| Dealer | Capital Auto Auction |
| Transmission | Automatic |
| Final Drive | FWD |
| Number of Cylinders | 6 |
| Engine Displacement (L) | 3.0L |
| Engine Placement | Transverse |

### TEST VEHICLE OPTIONS

| | |
|---|---|
| Driver Airbag | Y |
| Passenger Airbag | Y |
| Anti-theft System | Y |
| Cruise Control | Y |
| Power Windows | Y |
| Power Steering | Y |
| Power Door Locks | Y |
| Tilt Wheel | Y |
| Air Conditioning | Y |
| Power Brakes | Y |
| Disc Brakes, Front | Y |
| Disc Brakes, Rear | Drum |
| Anti-lock Brakes | Y |
| AM / FM / Cassette | Y |

### DATA FROM CERTIFICATION LABEL

| | |
|---|---|
| Manufactured By | Ford Motor Company |
| Date of Manufacture | 12/02 |

| | |
|---|---|
| GVWR (kg) | 2124 |
| GAWR Front (kg) | 1157 |
| GAWR Rear (kg) | 967 |

### DATA FROM TIRE PLACARD

| Measured Parameter | Front | Rear |
|---|---|---|
| Maximum Tire Pressure (psi) | - | - |
| Cold Pressure (psi) | 30 psi | 30 psi |
| Recommended Tire Size | P215/60R16 | P215/60R16 |
| Tire Size On Vehicle | - | - |
| Tire Manufacturer | - | - |

| Measured Parameter | Front | Rear | Third | Total |
|---|---|---|---|---|
| Type of Seats | Bucket | Bench | - | - |
| Number of Occupants | 2 | 3 | - | 5 |
| Capacity Wt. (VCW) (kg) | | | | |
| Cargo Wt. (RCLW) (kg) | | | | |

## DATA SHEET NO. 3

## BULLET VEHICLE PARAMETER DATA

Bullet Vehicle: 2003 Ford Taurus
Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10

## BULLET VEHICLE WEIGHTS

| | Units | As Delivered (UVW) (Axle) | | | As Tested (ATW) (Axle) | | |
|---|---|---|---|---|---|---|---|
| | | Front | Rear | Total | Front | Rear | Total |
| Left | kg | 464.0 | 239.5 | 703.5 | 445.0 | 275.5 | 720.5 |
| Right | kg | 464.5 | 217.5 | 682.0 | 438.5 | 255.0 | 693.5 |
| Ratio | % | 67% | 33% | - | 62% | 38% | - |
| Totals | kg | 928.5 | 457.0 | 1385.5 | 883.5 | 530.5 | 1414.0 |

## BULLET VEHICLE TARGET TEST WEIGHT CALCULATION

| Measured Parameter | Units | Value |
|---|---|---|
| Total Delivered Weight | kg | 1385.5 |
| Weight of 1 P572E ATD | kg | NA |
| Rated Cargo / Luggage Weight (RCLW) | kg | NA |
| Calculated Vehicle Target Weight (TVTW) | kg | 1385.5 |

## BULLET VEHICLE ATTITUDES

| | Units | LF | RF | LR | RR |
|---|---|---|---|---|---|
| As Delivered | mm | - | - | - | - |
| As Tested | mm | 710 | 711 | 686 | 696 |
| Post Test | mm | 665 | NA | 720 | 650 |

Weight of Ballast: _____

Vehicle Components Removed: Spare tire, trunk trim removed for Instrumentation

Weight Removed: 17.5kg

Added: Data Acquisition, Battery Box, Instrument Tray, Brake System

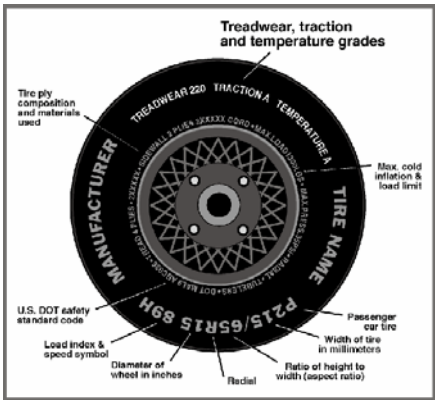
Weight Added: 46.0 kg

**DATA SHEET NO. 4**

**BULLET VEHICLE TIRE INFORMATION**

Bullet Vehicle: 2003 Ford Taurus
Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10

| | | | |
|---|---|---|---|
| Vehicle Year | - | Vehicle Make | Ford |
| VIN | - | Vehicle Model | Taurus |




| | **Left Front** | **Right Front** |
|---|---|---|
| Tire Manufacturer | Continental | Westlake |
| Tire Name | Touring Contact AS | H600 |
| Tire Type | Radial Tubeless | Radial Tubeless |
| Tire Width (mm) | P215 | P215 |
| Ratio of Height to Width (aspect ratio) | 60 | 60 |
| Radial | R | R |
| Wheel Diameter | 16 | 16 |
| Load Index & Speed Symbol | | |
| Treadwear | 520 | |
| Traction Grade | A | |
| Temperature Grade | B | |
| | **Left Rear** | **Right Rear** |
| Tire Manufacturer | Continental | Bridgestone |
| Tire Name | Touring Contact AS | Insignia SE 200 |
| Tire Type | Radial Tubeless | Radial Tubeless |
| Tire Width (mm) | P215 | P250 |
| Ratio of Height to Width (aspect ratio) | 60 | 60 |
| Radial | R | R |
| Wheel Diameter | 16 | 16 |
| Load Index & Speed Symbol | | |
| Treadwear | 520 | 380 |
| Traction Grade | A | B |
| Temperature Grade | B | B |

## DATA SHEET NO. 5

## BULLET VEHICLE MEASUREMENTS

Bullet Vehicle: 2003 Ford Taurus
Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10

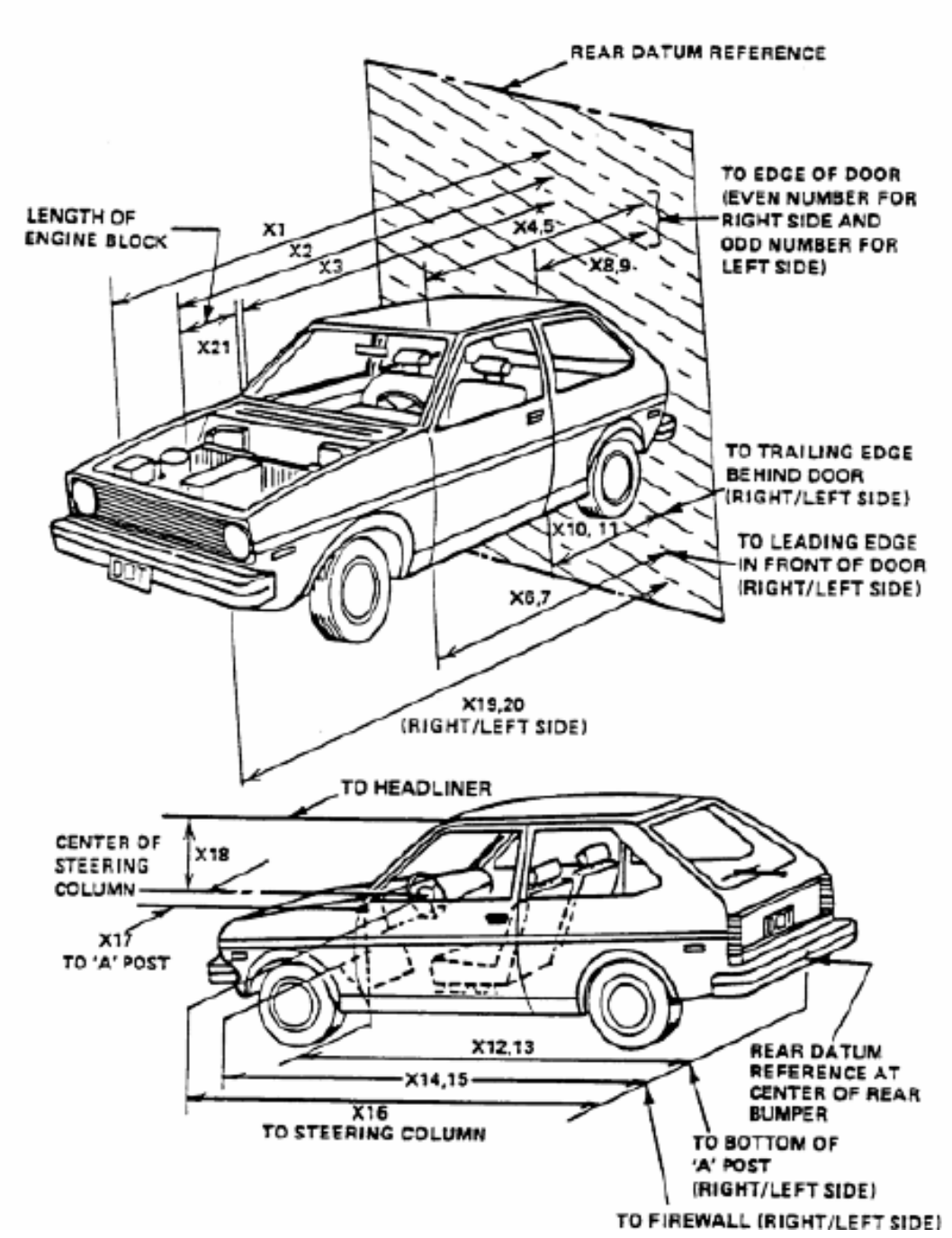
| No. | Measurement | Units | Pre-Test | Post-Test | Diff |
|---|---|---|---|---|---|
| 1 | Total length of vehicle at centerline | mm | 5029 | 4547 | 483 |
| 2 | RSOV to front of engine | mm | 4420 | 4191 | 229 |
| 3 | RSOV to firewall centerline | mm | 3810 | 3835 | -25 |
| 4 | RSOV to leading edge of right door | mm | 3512 | 3512 | 0 |
| 5 | RSOV to leading edge of left door | mm | 3531 | 3531 | 0 |
| 6 | RSOV to lower leading edge of right door | mm | 3442 | 3429 | 13 |
| 7 | RSOV to lower leading edge of left door | mm | 3429 | 3429 | 0 |
| 8 | RSOV to upper leading edge of right door | mm | 3473 | 3480 | -6 |
| 9 | RSOV to upper leading edge of left door | mm | 3467 | 3467 | 0 |
| | RSOV to trailing edge of right door | mm | 2400 | 2413 | -13 |
| | RSOV to trailing edge of left door | mm | 2413 | 2413 | 0 |
| 10 | RSOV to lower trailing edge of right door | mm | 2343 | 2350 | -6 |
| 11 | RSOV to lower trailing edge of left door | mm | 2343 | 2362 | -19 |
| | RSOV to upper trailing edge of right door | mm | 2375 | 2394 | -19 |
| | RSOV to upper trailing edge of left door | mm | 2381 | 2356 | 25 |
| | RSOV to trailing edge of rear right door | mm | 1422 | 1422 | 0 |
| | RSOV to trailing edge of rear left door | mm | 1397 | 1397 | 0 |
| | RSOV to lower trailing edge of rear right door | mm | 1689 | 1664 | 25 |
| | RSOV to lower trailing edge of rear left door | mm | 1626 | 1670 | -44 |
| | RSOV to upper trailing edge of rear right door | mm | 1410 | 1448 | -38 |
| | RSOV to upper trailing edge of rear left door | mm | 1397 | 1397 | 0 |
| 12 | RSOV to bottom of right ‘A’ pillar | mm | 3378 | | |
| 13 | RSOV to bottom of left ‘A’ pillar | mm | 3404 | 3391 | 13 |
| | RSOV to bottom of right ‘B’ pillar | mm | 3426 | | |
| | RSOV to bottom of left ‘B’ pillar | mm | 2413 | 2413 | 0 |
| | RSOV to bottom of right ‘C’ pillar | mm | 1651 | | |
| | RSOV to bottom of left ‘C’ pillar | mm | 1676 | 1676 | 0 |
| 14 | RSOV to firewall on right side | mm | 3620 | | |
| 15 | RSOV to firewall on left side | mm | 3658 | 3632 | 25 |
| 16 | RSOV to steering column | mm | 3010 | 3023 | -13 |
| 17 | Center of steering column to left ‘A’ pillar | mm | 445 | 419 | 25 |
| 18 | Center of steering column to headlining | mm | 394 | 394 | 0 |
| 19 | RSOV to right side of front bumper | mm | 4648 | | |
| 20 | RSOV to left side of front bumper | mm | 4648 | 4648 | 0 |
| 21 | Length of Engine Block | mm | | | |
| RD | RSOV to right side of dash panel | mm | 3124 | 3099 | 25 |
| CD | RSOV to center of dash panel | mm | | | |
| LD | RSOV to left side of dash panel | mm | 3150 | 3150 | 0 |

**DATA SHEET NO. 5… (continued)**

**BULLET VEHICLE MEASUREMENTS**

Bullet Vehicle: 2003 Ford Taurus

Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10



**DATA SHEET NO. 5… (Continued)**

**BULLET VEHICLE MEASUREMENTS**

Bullet Vehicle: 2003 Ford Taurus
Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10

| | Elements | Measurement (mm) |
|---|---|---|
| 1 | Total Length | 5029 |
| 2 | Total Width | 1829 |
| 3 | Front Bumper Top Height | 533 |
| 4 | Front Bumper Bottom Height | 381 |
| 5 | Longitudinal Member Top Height | 737 |
| 6 | Distance Between Longitudinal Members | 1422 |
| 7 | Longitudinal Member Width | 127 |
| 8 | Engine Top Height | |
| 9 | Engine Bottom Height | |
| 10 | Engine and Gearbox Width | |
| 11 | Front Bumper – Engine Distance | 584 |
| 12 | Front Shock Absorber Fixing Height | 889 |
| 13 | Bonnet Leading Edge Height | 711 |
| 14 | Front Shock Absorber Fixing Width | 118 |
| 15 | Front Axle – Distance from RSOV | 4001 |
| 16 | Rear Axle – Distance from RSOV | 1219 |
| 17 | A-Pillar – B-Pillar Distance | |
| 18 | C-Pillar – Rear Axle Distance | |
| 19 | B-Pillar – C-Pillar Distance | |
| 20 | Roof Sill Bottom Height | 1270 |
| 21 | Roof Sill Top Height | 1359 |
| 22 | Floor Sill Bottom Height | 279 |
| 23 | Floor Sill Top Height | 368 |

## DATA SHEET NO. 6

### BULLET VEHICLE ACCELEROMETER LOCATIONS & MEASUREMENTS

Bullet Vehicle: 2003 Ford Taurus
Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10

| Location | X (mm) | Y (mm) | Z (mm) |
|---|---|---|---|
| CG | 3010 | 864 | 368 |

X Reference from the rear bumper – positive towards the front of the vehicle
Y Reference from the passenger's side – positive towards the driver's side of the vehicle
Z Reference from the ground – positive up

Description of Instrumentation Included:

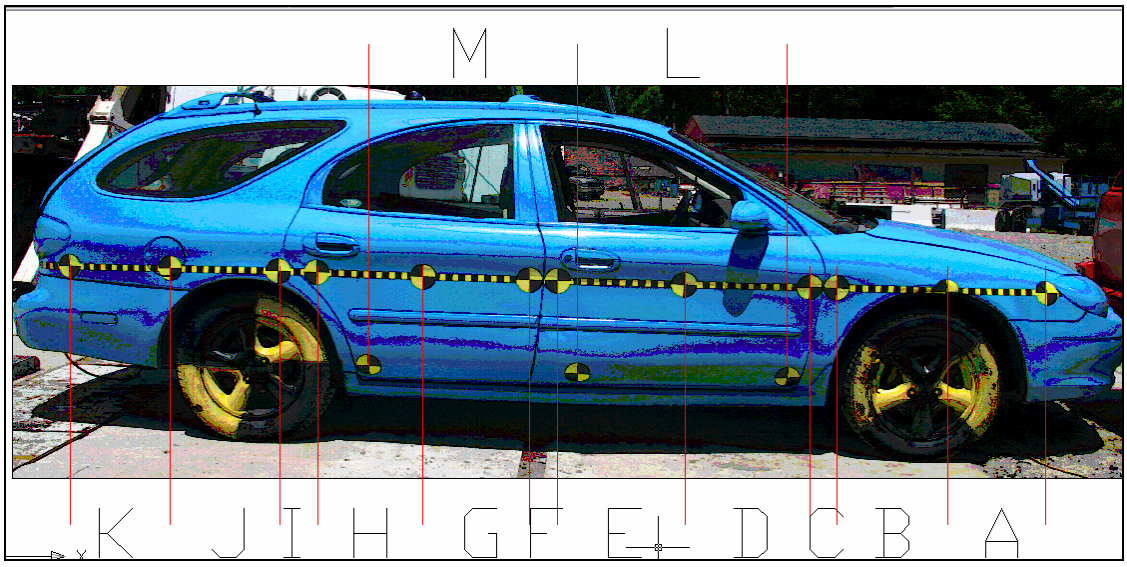
One triaxial accelerometer with a redundant, one triaxial roll rate

## DATA SHEET NO. 7

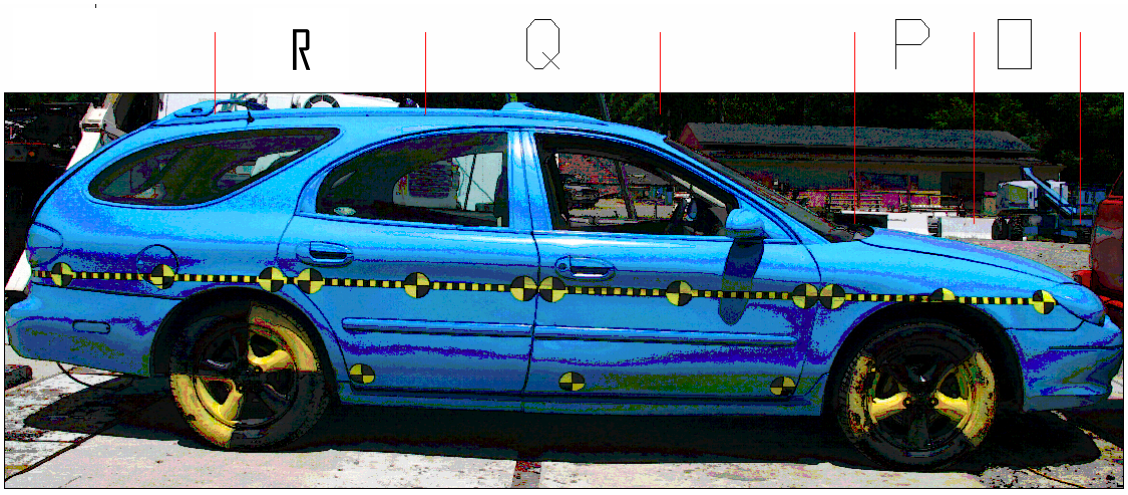
## BULLET VEHICLE PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Bullet Vehicle: 2003 Ford Taurus

Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10




**Side Marker Measurements**




**Top Marker Measurements**

## DATA SHEET NO. 7

## BULLET VEHICLE PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Bullet Vehicle: 2003 Ford Taurus

Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10

| | Driver's Side Middle | | Passenger's Side Middle | |
|---|---|---|---|---|
| | Pre | Post | Pre | Post |
| A | 438 mm | 435 | 436 | NA |
| B | 438 | 435 | 440 | NA |
| C | 111 | 100 | 109 | NA |
| D | 497 | 497 | 501 | 497 |
| E | 497 | 497 | 501 | 500 |
| F | 109 | 105 | 110 | 102 |
| G | 440 | 440 | 434 | 434 |
| H | 436 | 436 | 437 | 437 |
| I | 149 | 149 | 150 | 145 |
| J | 460 | 460 | 455 | 455 |
| K | 445 | 446 | 460 | 460 |
| | Driver's Side Low | | Passenger's Side Low | |
| L | 850 | 850 | 828 | 828 |
| M | 830 | 833 | 828 | 828 |
| | Top | | | |
| | Pre | | Post | |
| O | 473 | | 330 | |
| P | 464 | | 330 | |
| Q | 750 | | 750 | |
| R | 750 | | 750 | |

## DATA SHEET NO. 8

## BULLET VEHICLE INTRUSION MEASUREMENTS

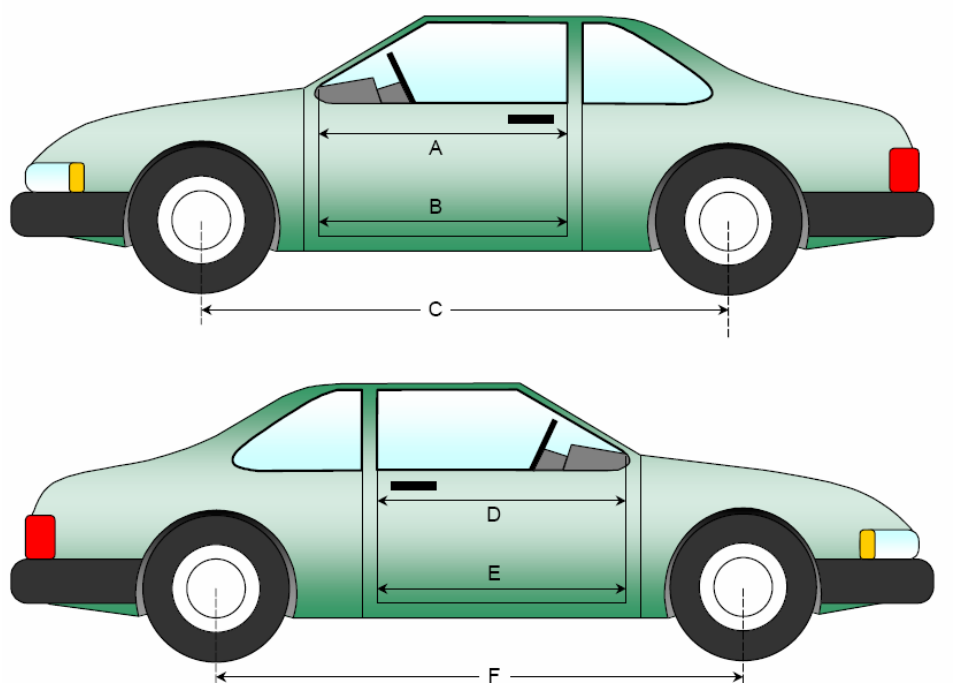
Bullet Vehicle: 2003 Ford Taurus
Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10

### DOOR OPENING WIDTH

| Item | Description | Units | Pre-Test | Post-Test | Difference |
|---|---|---|---|---|---|
| A | Left Side Upper | mm | 960 | 955 | 5 |
| B | Left Side Lower | mm | 920 | 920 | 0 |
| D | Right Side Upper | mm | 980 | NA | |
| E | Right Side Lower | mm | 920 | NA | |
| | Rear Left Side Upper | mm | 920 | 910 | 10 |
| | Rear Left Side Lower | mm | 670 | 670 | 0 |
| | Rear Right Side Upper | mm | 920 | NA | |
| | Rear Right Side Lower | mm | 670 | NA | |

### WHEELBASE MEASUREMENTS

| Item | Description | Units | Pre-Test | Post-Test | Difference |
|---|---|---|---|---|---|
| C | Left Side Wheelbase | mm | 2756 | 2769 | -13 |
| F | Right Side Wheelbase | mm | 2756 | 2654 | 102 |



## DATA SHEET NO. 9

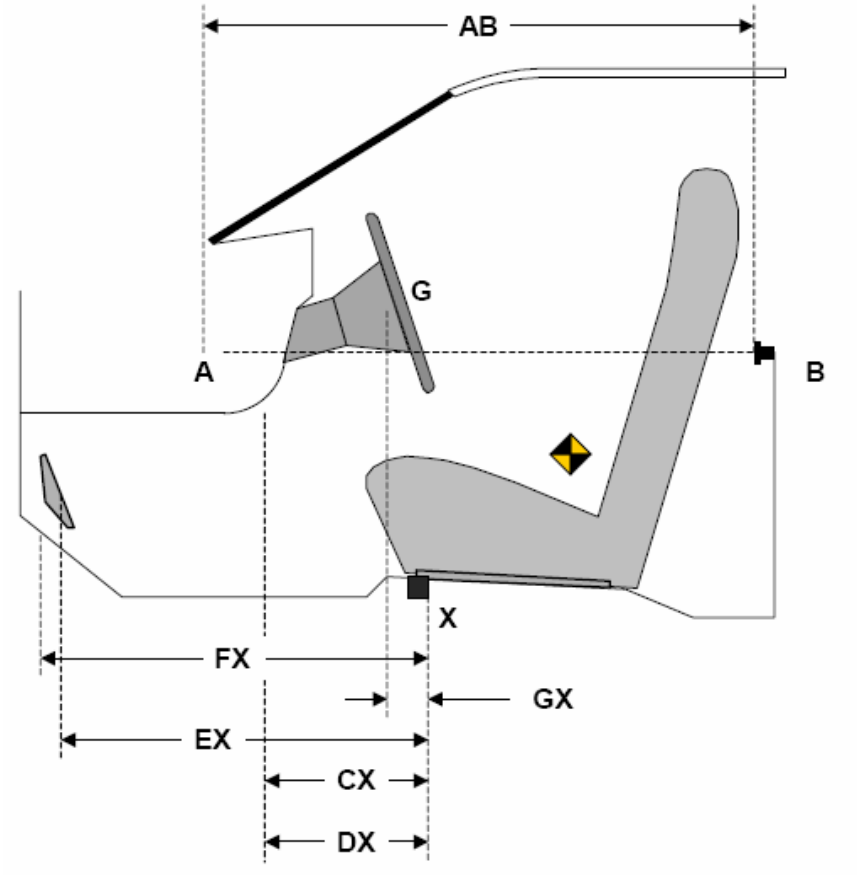
## BULLET VEHICLE INTRUSION MEASUREMENTS

Bullet Vehicle: 2003 Ford Taurus
Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10

### DRIVER COMPARTMENT INTRUSION

| Item | Description | Units | Pre-Test | Post-Test | Difference |
|---|---|---|---|---|---|
| AB | Door Opening (inside window jam) | mm | - | - | - |
| CX | Left Knee Bolster to X | mm | - | - | - |
| DX | Right Knee Bolster to X | mm | - | - | - |
| EX | Brake Pedal to X | mm | - | - | - |
| FX | Foot Rest to X | mm | - | - | - |
| GX | Center of Steering Column Wheel Hub to X | mm | - | - | - |

X = Front of Seat Track (stationary)




DRIVER COMPARTMENT

## DATA SHEET NO. 9

## BULLET VEHICLE ACCIDENT INVESTIGATION DIVISION DATA

Bullet Vehicle: 2003 Ford Taurus
Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10

### VEHICLE INFORMATION

VIN: 1FAFP55263A177881 Wheelbase (mm): 275.6
Vehicle Size Category: 3 Test Weight (kg): 1414.0

### ACCELEROMETER DATA

Accelerometer Locations: approx. at c.g., see accel. data sheet
Cal. Procedure / Interval: -
Integration Algorithm: - Linearity: -
Impact Velocity (kph): 110 kph
Velocity Change (kph): 73.4 kph Time of Separation (ms): 150

### CRUSH PROFILE

Collision Deformation Classification: 12FWZE4 Midpoint of damage -279 mm
Damage Region Length (mm): 1270 mm Impact Mode: Frontal Offset

| mm | | | Passenger' Side | | | | | | | CL | | | | | | | Driver's Side |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Desc. | Height | | 203 | 305 | 406 | 508 | 610 | 711 | 813 | 914 | 1016 | 1118 | 1219 | 1321 | 1422 | 1524 | 1626 |
| | | Pre | 190 | 122 | 75 | 46 | 22 | 0 | 0 | 0 | 0 | 0 | 15 | 35 | 68 | 110 | 170 |
| | | Post | | 500 | 460 | 460 | 480 | 540 | 528 | 510 | 470 | 455 | 445 | 185 | 250 | 350 | 350 |
| Mid-Bumper | 482.6 | Crush | | -378 | -385 | -414 | -458 | -540 | -528 | -510 | -470 | -455 | -430 | -150 | -182 | -240 | -180 |
| | | | | | | | | | | | | | | | | | |
| | | Pre | 300 | 250 | 205 | 167 | 163 | 160 | 150 | 148 | 150 | 155 | 160 | 160 | 172 | 222 | 290 |
| | | Post | 1300 | 810 | 930 | 655 | 675 | 700 | 710 | 710 | 675 | 660 | 535 | 545 | 465 | 460 | 470 |
| Hood Edge | 698.5 | Crush | -1000 | -560 | -725 | -488 | -512 | -540 | -560 | -562 | -525 | -505 | -375 | -385 | -293 | -238 | -180 |

## DATA SHEET NO. 10

## TARGET VEHICLE CRASH TEST SUMMARY

Target Vehicle: 1995 Ford Explorer
Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10

### TARGET VEHICLE PRIMARY IMPACT DATA

| **Measured Parameter** | **Units** | **Value** |
|---|---|---|
| Target Vehicle Velocity At Impact | kph | 0.0 |
| Target Vehicle Test Weight | kg | 1812.0 |
| Target Vehicle Maximum Static Crush | mm | 705 |
| Impact Point | mm | - |

### DOOR OPENING AND SEAT TRACK INFORMATION: TARGET VEHICLE

| Description | Driver | Passenger |
|---|---|---|
| Front Door Opening | Crush Resistance | Fully functional |
| Rear Door Opening | - | - |
| Seat Track Shift (mm) | 130 mm rearward to full rear | - |
| Seat Back Failure (deg) | To 44 deg rearward from 18 deg | - |

### TEST DUMMY INFORMATION: TARGET VEHICLE

| Description | Driver | Passenger |
|---|---|---|
| Dummy Type | HII $50^{th}$ | - |
| Head Contact | Seat back, rear seat, d-ring | - |
| Chest Contact | - | - |
| Abdomen Contact | - | - |
| Left Knee Contact | - | - |
| Right Knee Contact | - | - |

### VIDEO COVERAGE

| | |
|---|---|
| High Speed | 8 |
| Real Time | 3 |
| Total | 11 |

| | |
|---|---|
| Driver ATD Sensors | - |
| Passenger ATD Sensors | - |
| Bullet Vehicle Structure Accelerometers | 9 |
| Target Vehicle Structure Accelerometers | 12 |
| Total | 21 |

## DATA SHEET NO. 11

## GENERAL TEST AND TARGET VEHICLE PARAMETER DATA

Target Vehicle: 1995 Ford Explorer
Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10

### TARGET VEHICLE INFORMATION

| | |
|---|---|
| Manufacturer | Ford |
| Model | Explorer Sport |
| Body Style | 2DR SUV |
| Vehicle No. | 2 |
| VIN | 1FMCU24X6SUB74635 |
| Color | Red |
| Delivery Date | |
| Odometer Reading | 203,660 |
| Dealer | Capital Auto Auction |
| Transmission | Automatic |
| Final Drive | 4WD |
| Number of Cylinders | 6 |
| Engine Displacement (L) | 4.0 L |
| Engine Placement | Longitudinal |

### TEST VEHICLE OPTIONS

| | |
|---|---|
| Driver Airbag | Y |
| Passenger Airbag | Y |
| Anti-theft System | |
| Cruise Control | Y |
| Power Windows | Y |
| Power Steering | Y |
| Power Door Locks | Y |
| Tilt Wheel | Y |
| Air Conditioning | Y |
| Power Brakes | Y |
| Disc Brakes, Front | Y |
| Disc Brakes, Rear | Y |
| Anti-lock Brakes | |
| AM / FM / Cassette | Y |

### DATA FROM CERTIFICATION LABEL

| | |
|---|---|
| Manufactured By | Ford Motor Company |
| Date of Manufacture | 5/95 |

| | |
|---|---|
| GVWR (kg) | 2222 kg |
| GAWR Front (kg) | 1138 kg |
| GAWR Rear (lkg) | 1202 kg |

### DATA FROM TIRE PLACARD

| Measured Parameter | | |
|---|---|---|
| Maximum Tire Pressure (psi) | - | - |
| Cold Pressure (psi) | 26 psi | 26 psi |
| Recommended Tire Size | P235/75R15 | P235/75R15 |
| Tire Size On Vehicle | - | - |
| Tire Manufacturer | - | - |

| Measured Parameter | Front | Rear | Third | Total |
|---|---|---|---|---|
| Type of Seats | Bucket | Bench | - | |
| Number of Occupants | 2 | 3 | - | 5 |
| Capacity Wt. (VCW) (kg) | | | | |
| Cargo Wt. (RCLW) (kg) | | | | |

## DATA SHEET NO. 12

## GENERAL TEST AND TARGET VEHICLE PARAMETER DATA

Target Vehicle: 1995 Ford Explorer
Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10

### TARGET VEHICLE WEIGHTS

| | Units | As Delivered (UVW) (Axle) | | | As Tested (ATW) (Axle) | | |
|---|---|---|---|---|---|---|---|
| | | Front | Rear | Total | Front | Rear | Total |
| Left | kg | 488.5 | 408.5 | 897.0 | 515.0 | 439.5 | 954.5 |
| Right | kg | 453.5 | 371.5 | 825.0 | 466.5 | 391.0 | 857.5 |
| Ratio | % | 56% | 44% | - | 54% | 46% | - |
| Totals | kg | 942.0 | 726.0 | 1668.0 | 981.5 | 830.5 | 1812.0 |

### TARGET VEHICLE TARGET TEST WEIGHT CALCULATION

| Measured Parameter | Units | Value |
|---|---|---|
| Total Delivered Weight | kg | 1668.0 |
| Weight of 1 P572E ATD | kg | 78.0 |
| Rated Cargo / Luggage Weight (RCLW) | kg | - |
| Calculated Vehicle Target Weight (TVTW) | kg | 1744.0 |

### TARGET VEHICLE ATTITUDES

| | Units | LF | RF | LR | RR |
|---|---|---|---|---|---|
| As Delivered | mm | - | - | - | - |
| As Tested | mm | 893 | 900 | 897 | 900 |
| Post Test | mm | 870 | 935 | 960 | 845 |

Weight of Ballast: _____

Vehicle Components Removed: oil, transmission fluid, antifreeze

Weight Removed: 18 kg

Added: battery box, data acquisition, brake system, atd

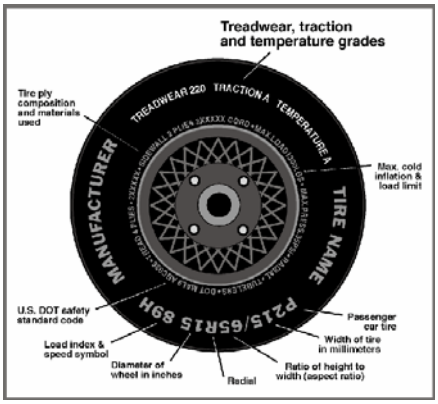
Weight Added: 108.0 kg

**DATA SHEET NO. 13**

**TARGET VEHICLE TIRE INFORMATION**

Target Vehicle: 1995 Ford Explorer
Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10

| | | | |
|---|---|---|---|
| Vehicle Year | - | Vehicle Make | - |
| VIN | - | Vehicle Model | - |




| | **Left Front** | **Right Front** |
|---|---|---|
| Tire Manufacturer | Goodyear | Goodyear |
| Tire Name | Wrangler RTS | Wrangler RTS |
| Tire Type | Tubeless Radial | Tubeless Radial |
| Tire Width (mm) | P235 | P235 |
| Ratio of Height to Width (aspect ratio) | 75 | 75 |
| Radial | R | R |
| Wheel Diameter | 15 | 15 |
| Load Index & Speed Symbol | | |
| Treadwear | 340 | 340 |
| Traction Grade | A | A |
| Temperature Grade | B | B |
| | **Left Rear** | **Right Rear** |
| Tire Manufacturer | Goodyear | Michelin |
| Tire Name | Wrangler RTS | X Radial LT |
| Tire Type | Tubeless Radial | Tubeless Radial |
| Tire Width (mm) | P235 | 235 |
| Ratio of Height to Width (aspect ratio) | 75 | 75 |
| Radial | R | R |
| Wheel Diameter | 15 | 15 |
| Load Index & Speed Symbol | | Load Range C |
| Treadwear | 340 | |
| Traction Grade | A | |
| Temperature Grade | B | |

**DATA SHEET NO. 14**

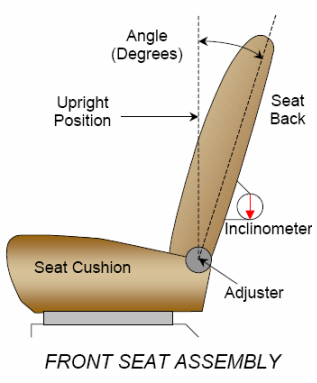
**TARGET VEHICLE SEAT INFORMATION**

Target Vehicle: 1995 Ford Explorer
Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10

**NORMAL DESIGN RIDING POSITION**

Driver Seat Back Angle: 18 deg
Passenger Seat Back Angle: -- deg

($20^0$ rearward of most forward locked position.)



*FRONT SEAT ASSEMBLY*

**SEAT FORE / AFT POSITION**

The driver and passenger seats are operated:
(**manually** / electrically)

Driver Seat Fore / Aft Total Travel: 250 positions / **mm**
Passenger Seat Fore / Aft Total Travel: - positions / **mm**

As Tested:
Driver Seat Fore / Aft Position: center of track, 125 mm from front position
Passenger Seat Fore / Aft Position: -

**SEAT BELT UPPER ANCHORAGE**

The seat belt anchorages were placed in _____ position of _____ with the top position as one.

or No Adjustment Available

**SEAT HEIGHT ADJUSTMENT**

Seat is positioned at its lowest setting

***NOTES***: _____
_____

**DATA SHEET NO. 14… (continued)**

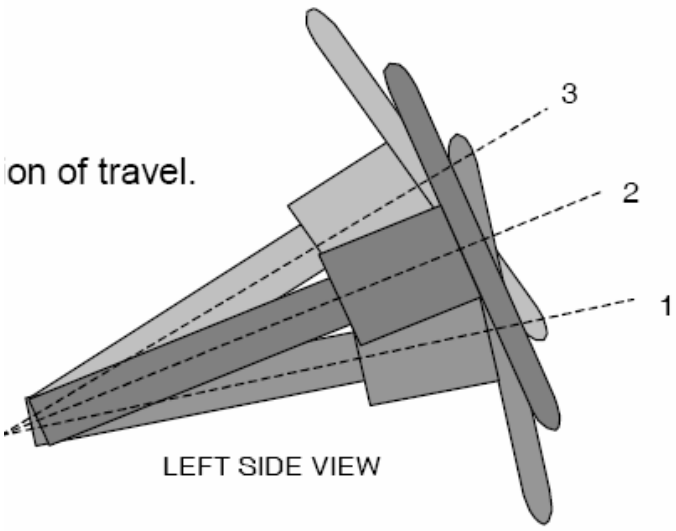
**TARGET VEHICLE INFORMATION**

Target Vehicle: 1995 Ford Explorer
Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10

**STEERING COLUMN ADJUSTMENT**

The steering column was placed in the mid position of travel.

| Pos. | Desc | Angle |
|---|---|---|
| 3 | Full Up | 65.0 deg |
| 2 | Center | 72.5 deg |
| 1 | Full Down | 80.0 deg |




*STEERING COLUMN ASSEMBLY*

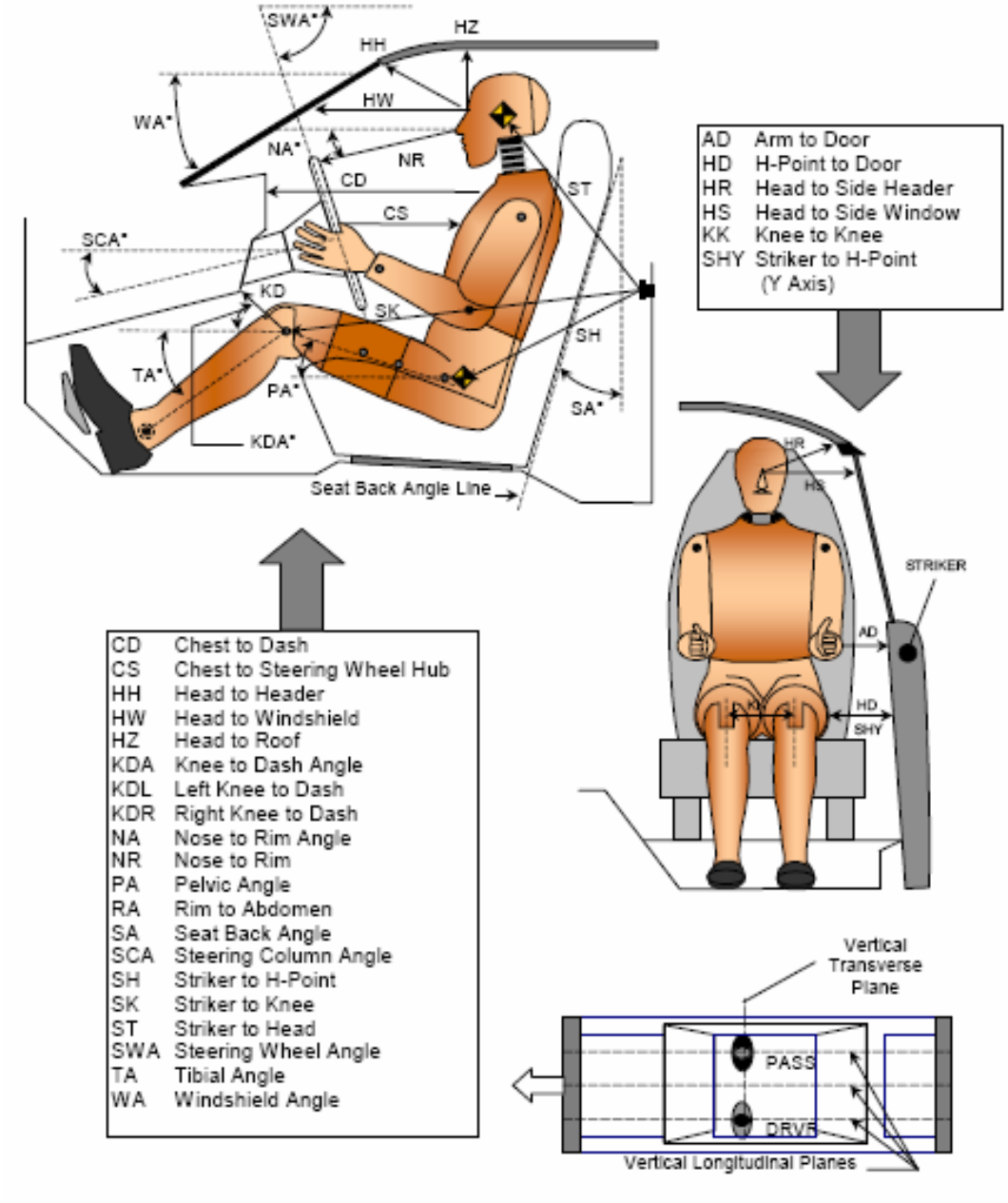
**DATA SHEET NO. 15**

**TARGET VEHICLE DUMMY POSITIONING IN VEHICLE**

Target Vehicle: 1995 Ford Explorer

Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10

DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS



**DATA SHEET NO. 15…(continued)**

**TARGET VEHICLE DUMMY POSITIONING IN VEHICLE**

Target Vehicle: 1995 Ford Explorer
Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10

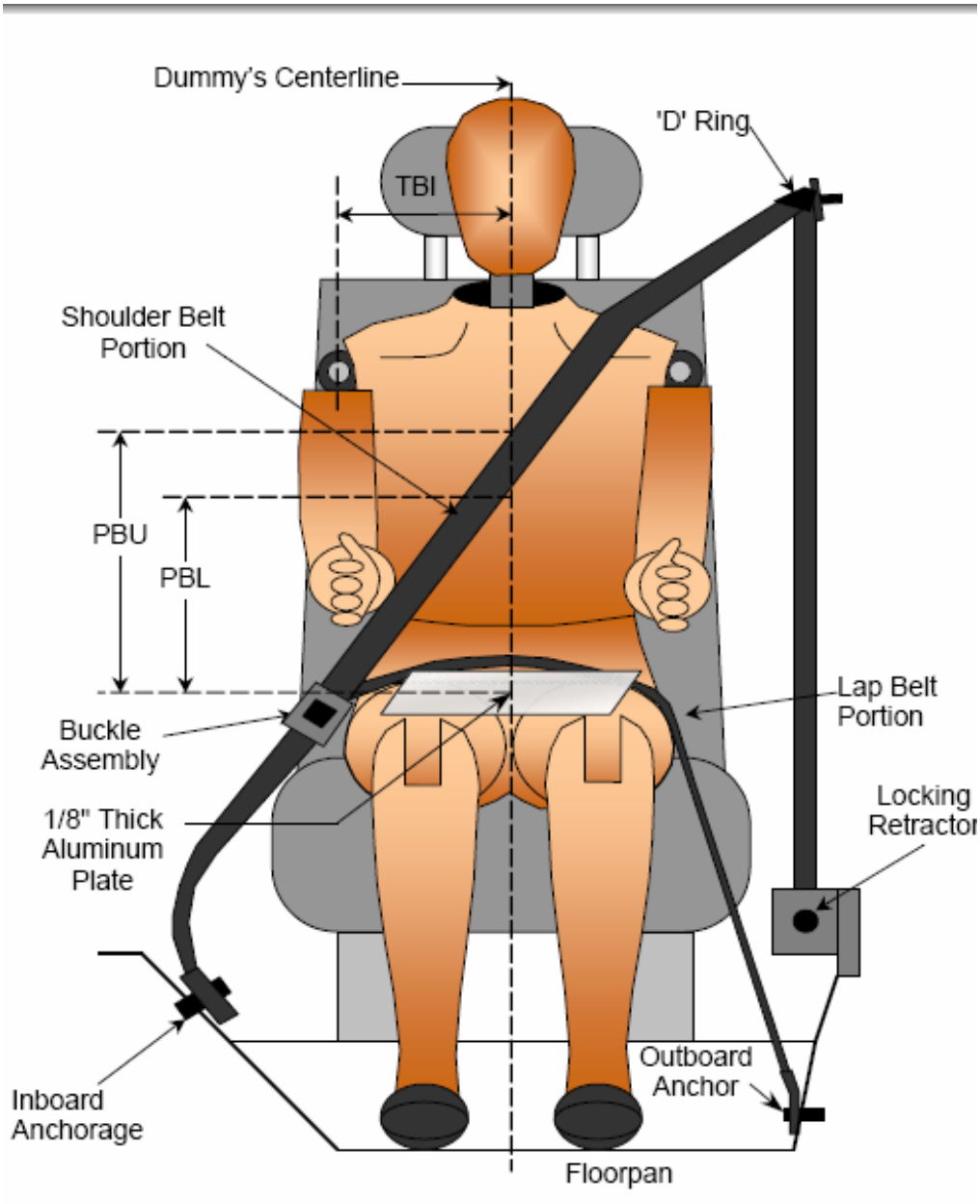
| Code | Measurement Description | Driver | | Passenger | |
|---|---|---|---|---|---|
| | | Length (mm) | Angle ($^o$) | Length (mm) | Angle ($^o$) |
| WA | Windshield Angle | | 42 deg | | - |
| SWA | Steering Wheel Angle | | 72.5 deg | | - |
| SCA | Steering Column Angle | | 20 deg | | - |
| SA | Seat Back Angle (head rest post) | | 18 deg | | - |
| HZ | Head to Roof (Z) | 240 | | - | |
| HH | Head to Header | 320 | | - | |
| HW | Head to Windshield | 590 | | - | |
| HR | Head to Side Header (Y) | 275 | | - | |
| NR | Nose to Rim | 440 | | - | |
| CD | Chest to Dash | 590 | | - | |
| CS | Chest to Steering Hub | 300 | | - | |
| RA | Rim to Abdomen | | | - | |
| KDL | Left Knee to Dash | 50 | | - | |
| KDR | Right Knee to Dash | 80 | | - | |
| PA | Pelvic Angle | | | | - |
| TA | Tibia Angle | | | | - |
| KK | Knee to Knee (Y) | 200 | | - | |
| SK | Striker to Knee | 830 | | - | |
| ST | Striker to Head | 650 | | - | |
| SH | Striker to H-Point | | | - | |
| SHY | Striker to H-Point (Y) | | | - | |
| HS | Head to Side Window | 358 | | - | |
| HD | H-Point to Door | | | - | |
| AD | Arm to Door (Y) | 0 | | - | |
| AA | Ankle to Ankle | | | - | |

**DATA SHEET NO. 16**

**TARGET VEHICLE SEAT BELT POSITIONING DATA**

Target Vehicle: 1995 Ford Explorer

Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10




**SEAT BELT POSITIONING MEASUREMENTS**

| Measurement Description | Units | Driver | Passenger |
|---|---|---|---|
| PBU – Top surface of reference to belt upper edge | mm | 262 | - |
| PBL – Top surface of reference to belt lower edge | mm | 182 | - |

## DATA SHEET NO. 17

## TARGET VEHICLE MEASUREMENTS

Target Vehicle: 1995 Ford Explorer
Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10

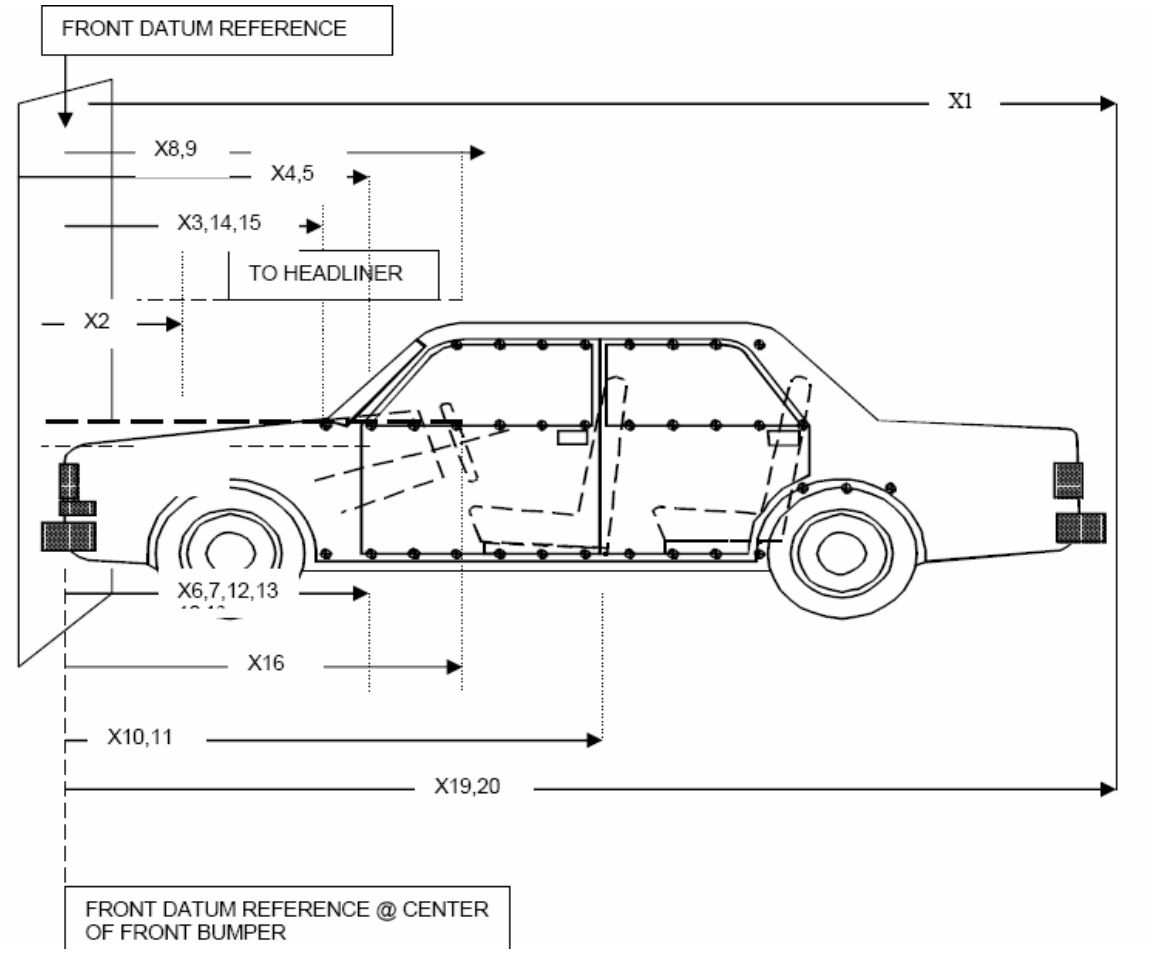
| No. | Measurement | Units | Pre-Test | Post-Test | Difference |
|---|---|---|---|---|---|
| 1 | Total length of vehicle at centerline | Mm | 4470 | 3730 | 740 |
| 4 | FSOV to leading edge of right door | Mm | 1435 | 1461 | -25 |
| 5 | FSOV to leading edge of left door | Mm | 1435 | 1448 | -13 |
| 6 | FSOV to lower leading edge of right door | Mm | 1486 | 1473 | 13 |
| 7 | FSOV to lower leading edge of left door | Mm | 1499 | 1511 | -13 |
| 8 | FSOV to upper leading edge of right door | Mm | 1435 | 1448 | -13 |
| 9 | FSOV to upper leading edge of left door | Mm | 1435 | 1473 | -38 |
| | FSOV to trailing edge of right door | Mm | 2667 | 2667 | 0 |
| | FSOV to trailing edge of left door | Mm | 2667 | 2680 | -13 |
| 10 | FSOV to lower trailing edge of right door | Mm | 2667 | 2667 | 0 |
| 11 | FSOV to lower trailing edge of left door | Mm | 2667 | 2680 | -13 |
| | FSOV to upper trailing edge of right door | Mm | 2667 | 2667 | 0 |
| | FSOV to upper trailing edge of left door | Mm | 2667 | 2680 | -13 |
| | FSOV to trailing edge of rr door | Mm | - | - | - |
| | FSOV to trailing edge of lr door | Mm | - | - | - |
| | FSOV to lower edge of rr door | Mm | - | - | - |
| | FSOV to lower edge of lr door | Mm | - | - | - |
| | FSOV to upper trailing edge of rr door | Mm | - | - | - |
| | FSOV to upper trailing edge of lr door | Mm | - | - | - |
| 12 | FSOV to bottom of right ‘A’ pillar | Mm | 1499 | 1549 | -51 |
| 13 | FSOV to bottom of left ‘A’ pillar | Mm | 1524 | 1549 | -25 |
| | FSOV to bottom of right ‘B’ pillar | Mm | 2616 | 2654 | -38 |
| | FSOV to bottom of left ‘B’ pillar | Mm | 2629 | 2680 | -51 |
| | FSOV to bottom of right ‘C’ pillar | Mm | 3334 | 3340 | -6 |
| | FSOV to bottom of left ‘C’ pillar | Mm | 3340 | 3327 | 13 |
| 16 | FSOV to steering column | Mm | - | - | - |
| 17 | Center of steering column to left ‘A’ pillar | Mm | 420 | - | - |
| 18 | Center of steering column to headlining | Mm | 410 | 410 | 0 |
| 19 | FSOV to right side of rear bumper | Mm | 4429 | 4216 | 13 |
| 20 | FSOV to left side of rear bumper | Mm | 4235 | 3658 | 578 |
| C1 | Crush Zone 1 at right side | Mm | - | - | - |
| C2 | Crush Zone 2 at right side | Mm | - | - | - |
| C3 | Crush Zone 3 at right side | Mm | - | - | - |
| C4 | Crush Zone 4 at left side | Mm | - | - | - |
| C5 | Crush Zone 5 at left side | Mm | - | - | - |
| C6 | Crush Zone 6 at left side | Mm | - | - | - |

**DATA SHEET NO. 17… (continued)**

**TARGET VEHICLE MEASUREMENTS**

Target Vehicle: 1995 Ford Explorer

Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10



**DATA SHEET NO. 17… (Continued)**

**TARGET VEHICLE MEASUREMENTS**

Target Vehicle: 1995 Ford Explorer
Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10

| | Elements | Pre-Test (mm) |
|---|---|---|
| 1 | Total Length | 4470 |
| 2 | Total Width | 1778 |
| 3 | Rear Bumper Top Height | 600 |
| 4 | Rear Bumper Bottom Height | 400 |
| 5 | Longitudinal Member Top Height | |
| 6 | Distance Between Longitudinal Members | |
| 7 | Longitudinal Member Width | |
| 8 | Front Bumper distance from FSOV | 0 |
| 9 | Front Axle distance from FSOV | 838 |
| 10 | A Pillar distance from FSOV | 1486 |
| 11 | B Pillar distance from FSOV | 2667 |
| 12 | C Pillar distance from FSOV | 3353 |
| 13 | Rear Bumper from FSOV | 4470 |
| 14 | Front Shock Absorber Fixing Width | |
| 15 | Rear Bumper – Rear Axle distance | |
| 16 | Front Axle – A Pillar Distance | |
| 17 | A-Pillar – B-Pillar Distance | |
| | C-Pillar – Rear Axle Distance | |
| | B-Pillar – C-Pillar Distance | |
| 20 | Roof Sill Bottom Height | 1580 |
| 21 | Roof Sill Top Height | 1660 |
| 22 | Floor Sill Bottom Height | 320 |
| 23 | Floor Sill Top Height | 480 |

**DATA SHEET NO. 18**

**TARGET VEHICLE ACCELEROMETER LOCATIONS & MEASUREMENTS**

Target Vehicle: 1995 Ford Explorer
Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10

| Location | X (mm) | Y (mm) | Z (mm) |
|---|---|---|---|
| CG | 1803 | 902 | 610 |

X Reference from the front bumper – positive towards the rear of the vehicle
Y Reference from the driver's side – positive towards the passenger's side of the vehicle
Z Reference from the ground – positive up

Description of Instrumentation Included:

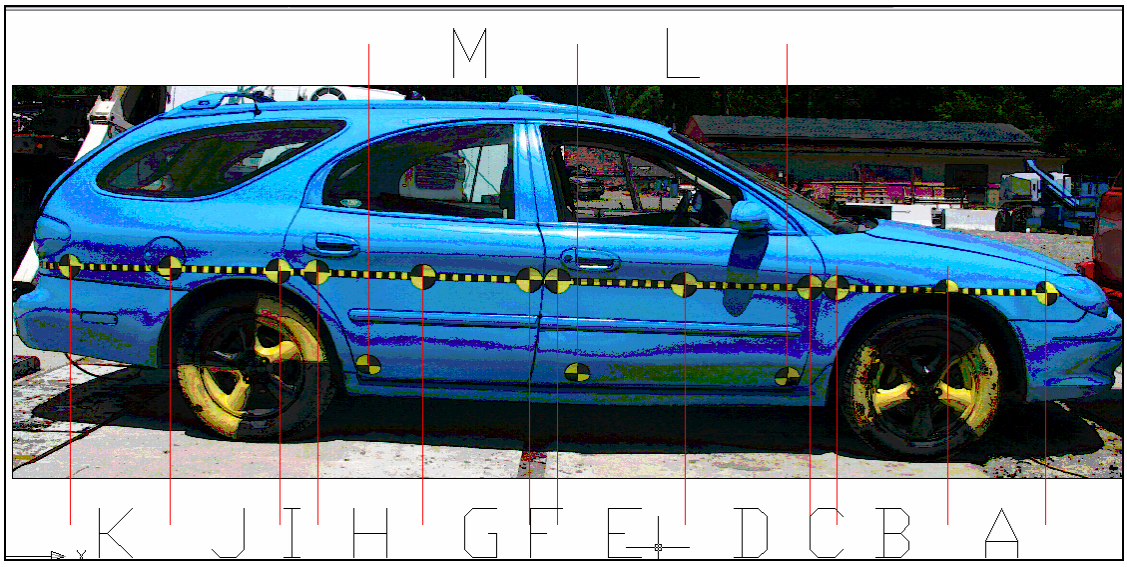
One triaxial accelerometer with redundant and one triaxial roll rate with redundant

**DATA SHEET NO. 19**

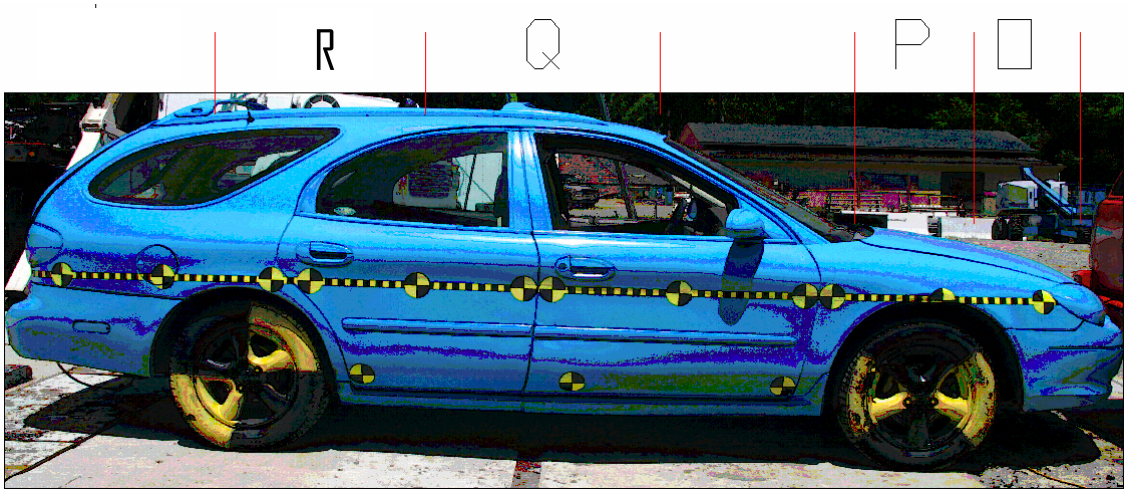
**TARGET VEHICLE TARGET MEASUREMENTS**

Target Vehicle: 1995 Ford Explorer

Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10




**Side Marker Measurements**




**Top Marker Measurements**

**DATA SHEET NO. 19…Continued**

**TARGET VEHICLE PHOTOGRAPHIC REFERENCE TARGET LOCATIONS**

Target Vehicle: 1995 Ford Explorer

Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10

| | Driver's Side Middle | | Passenger's Side Middle | |
|---|---|---|---|---|
| | Pre | Post | Pre | Post |
| A | 490 | 490 | 489 | 489 |
| B | 495 | 495 | 488 | 488 |
| C | 109 | 102 | 106 | 106 |
| D | 562 | 562 | 558 | 558 |
| E | 562 | 562 | 561 | 561 |
| F | 110 | 94 | 110 | 110 |
| G | 714 | 678 | 710 | 710 |
| H | 720 | 480 | 718 | 721 |
| I | | | | |
| J | | | | |
| K | | | | |
| | Driver's Side Low | | Passenger's Side Low | |
| L | 733 | 741 | 736 | 741 |
| M | 735 | 655 | 732 | 732 |
| | Top | | | |
| | Pre | | Post | |
| O | 480 | | 480 | |
| P | 470 | | 470 | |
| Q | 1015 | | 1015 | |
| R | 1015 | | 1015 | |

## DATA SHEET NO. 20

## TARGET VEHICLE INTRUSION MEASUREMENTS

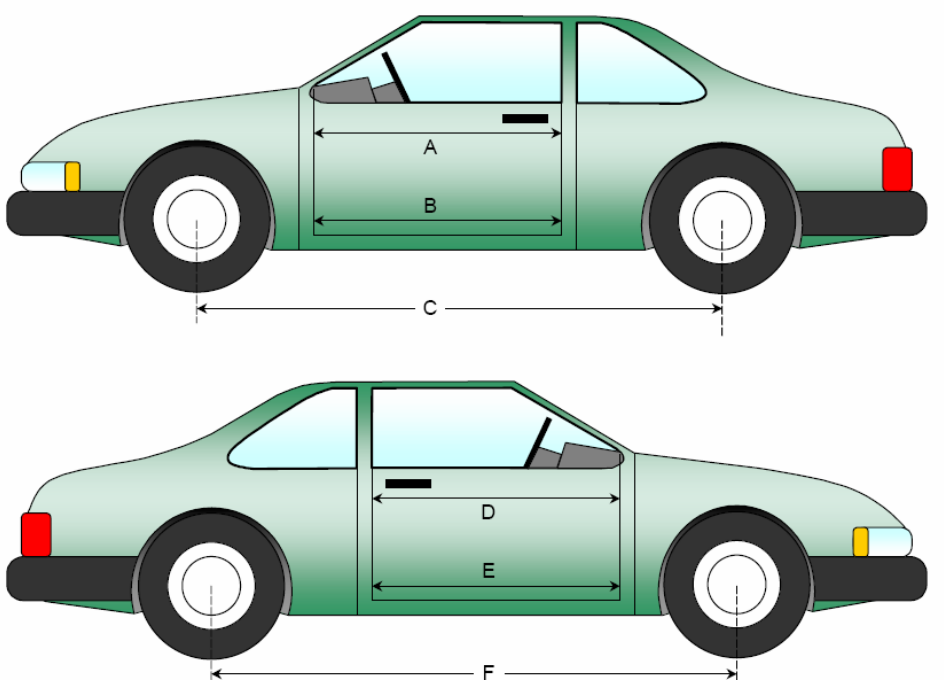
Target Vehicle: 1995 Ford Explorer
Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10

### DOOR OPENING WIDTH

| Item | Description | Units | Pre-Test | Post-Test | Difference |
|---|---|---|---|---|---|
| A | Left Side Upper | mm | 1090 | 1075 | 15 |
| B | Left Side Lower | mm | 1065 | 1050 | 15 |
| D | Right Side Upper | mm | 1090 | 1090 | 0 |
| E | Right Side Lower | mm | 1065 | 1060 | 5 |
| | Rear Left Side Upper | mm | - | - | - |
| | Rear Left Side Lower | mm | - | - | - |
| | Rear Right Side Upper | mm | - | - | - |
| | Rear Right Side Lower | mm | - | - | - |

### WHEELBASE MEASUREMENTS

| Item | Description | Units | Pre-Test | Post-Test | Difference |
|---|---|---|---|---|---|
| C | Left Side Wheelbase | mm | 2591 | 2310 | 281 |
| F | Right Side Wheelbase | mm | 2591 | 2605 | -14 |



## DATA SHEET NO. 21

### TARGET VEHICLE ACCIDENT INVESTIGATION DIVISION DATA

Target Vehicle: 1995 Ford Explorer
Test Program: 70 MPH 30% Offset Rear Impact Test Date: 8/5/10

### VEHICLE INFORMATION

VIN: 1FMCU24X6SUB74635 Wheelbase (mm): 2591
Vehicle Size Category: 3 Test Weight (kg): 1812

### ACCELEROMETER DATA

Accelerometer Locations: approx. at c.g., see accel. data sheet
Cal. Procedure / Interval: -
Integration Algorithm: - Linearity: -
Impact Velocity (kph): 0 kph
Velocity Change (kph): 51.6 kph Time of Separation (ms): 150

### CRUSH PROFILE

Collision Deformation Classification: 06BWYA6 Midpoint of damage: -203 mm
Damage Region Length (mm): 1423 mm Impact Mode: Rear Offset

| mm | | | Driver's Side | | | | | | | | CL | | | | | | | | Passenger's Side |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Description | Height | | 76 | 178 | 279 | 381 | 483 | 584 | 686 | 787 | 889 | 991 | 1092 | 1194 | 1295 | 1397 | 1499 | 1600 | 1702 |
| | 520 | Pre | | 51 | 42 | 36 | 28 | 27 | 27 | 92 | 92 | 92 | 55 | 22 | 26 | 28 | 39 | 48 | |
| | | Post | NA | NA | NA | NA | NA | NA | NA | ***797*** | ***730*** | ***400*** | ***315*** | ***305*** | 290 | 200 | 275 | NA | NA |
| Bumper | | Crush | | | | | | | | -705 | -638 | -308 | -260 | -283 | -264 | -172 | -236 | | |
| ***Bold Italicized = Measured on Bumper*** | | | | | | | | | | | | | | | | | | | |
| | | Pre | | 147 | 122 | 122 | 118 | 109 | 105 | 102 | 102 | 102 | 105 | 109 | 113 | 116 | 125 | 130 | |
| Bottom Body | 660 | Post | ***785*** | ***730*** | ***708*** | ***705*** | ***690*** | ***675*** | ***805*** | ***770*** | ***490*** | ***440*** | 335 | 260 | 215 | 180 | 255 | NA | NA |
| | | Crush | | -583 | -586 | -583 | -572 | -566 | -700 | -668 | -388 | -338 | -230 | -151 | -102 | -64 | -130 | | |
| | | Pre | | | 105 | | 95 | | 87 | | 84 | | 86 | | 92 | | 98 | | |
| Mid Body | 1100 | Post | 310 | 300 | 310 | 297 | 288 | 275 | 250 | 218 | 210 | 218 | 165 | 150 | 130 | 111 | 130 | 255 | - |
| | | Crush | | | -205 | | -193 | | -163 | | -126 | | -79 | | -38 | | -32 | | |
| | | Pre | | | 345 | | 330 | | 325 | | 320 | | 320 | | 325 | | 340 | | |
| Upper Body | 1610 | Post | NA | 350 | 350 | 330 | 325 | 320 | 320 | 315 | 305 | 305 | 300 | 300 | 300 | 300 | NA | NA | NA |
| | | Crush | | | -5 | | 5 | | 5 | | 15 | | 20 | | 25 | | | | |

# VEHICLE TEST SETUP FORM

| GENERAL | |
|---|---|
| **TEST NO.** | 10011 |
| **DATE** | 08/05/2010 |
| **TIME** | 01:30 PM |
| **WEATHER** | Sunny |
| **TEST CONFIGURATION** | Ford Tauras into Ford Explorer Rear Impact at 70 Percent Engagement |
| **SPEED (KM/H)** | 112 KM\H |
| **PURPOSE** | Preparations for Accident Reconstruction Conference in September |

**COMMENTS**

**Speed Trap 1: Front Tire-110.271 km/hr-68.519 mph Rear Tire-108.468 km/hr-67.399 mph**

**Speed Trap 2: Front Tire109.360 km/hr-67.953 mph Rear Tire 118.930 km/hr-73.899 mph**

# VEHICLE PARAMETERS

**Veh No:** Bullet-Tauras **Test No:** 10011 **Date:** 08/05/10

**Make:** Ford
**Model:** Tauras
**Year:** 2003
**Color:** Burgandy to Blue
**Engine:** 3
**Vin No.:** 1FAFP55263A177881

**Measured Curb mass (Kg)**
**LF:** 464.00
**RF:** 464.50
**LR:** 239.50
**RR:** 217.50

**Location of Vehicle CG (cm)**
**X-Axis (from LF to LR):** 103.50
**Y-Axis (From LF to RF):** 75.80
**Z-Axis (From Ground):** 43.00

**Measured Test Inertial Mass (Kg)**
**LF:** 445.00
**RF:** 438.50
**LR:** 275.50
**RR:** 255.00

**Location of CG Accelerometer (cm)**
**X-Axis (from LF to LR):** 87.50
**Y-Axis (From LF to RF):** 93.20
**Z-Axis (From Ground):** 32.00

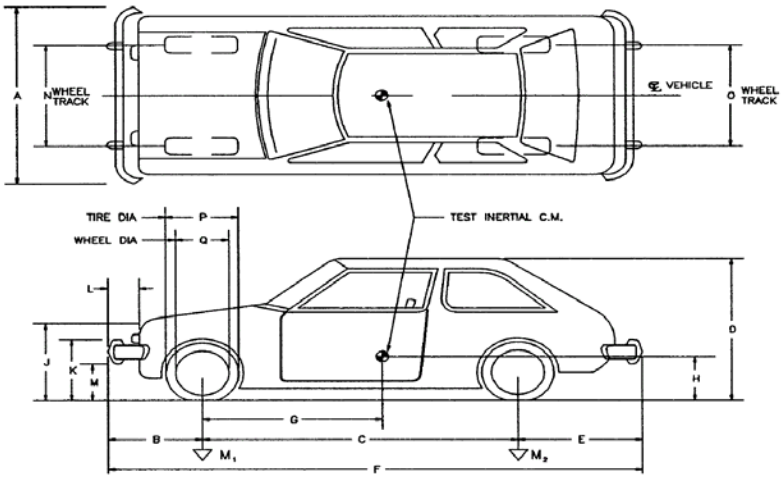
| | Items Removed | Mass (Kg) | Added | Mass (Kg) |
|---|---|---|---|---|
| 1 | Oil | 5.50 | Data Acquisition | 6.00 |
| 2 | Coolant | 7.00 | Battery Box | 15.50 |
| 3 | Transmission Fluid | 5.00 | Instrument Tray | 19.00 |
| 4 | | | Brake System | 5.50 |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| 12 | | | | |
| | **Total Mass Removed (Kg) =** | 17.50 | **Total Mass Added (Kg) =** | 46.00 |

**Measured Curb Mass =** 1,385.50
**Removed Total =** 17.50
**Stripped Vehicle Mass =** 1,368.00
**Added Mass =** 46.00
**Calculated Test Inertial Mass =** 1,414.00
**Measured Test Inertial Mass =** 1,414.00

***All weights are in Kg***

| | | | | | |
|---|---|---|---|---|---|
| **TEST NO.:** | 10011 | **DATE:** | 8/5/2010 | **ODOMETER:** | 131417 |
| **MAKE:** | Ford | **MODEL:** | Tauras | **YEAR:** | 2003 |
| **VIN NO.:** | 1FAFP55263A177881 | **TIRE SIZE:** | 215 60 R16 | | |
| **TIRE INFLATION PRESSURE:** | 32 | | | | |
| **MASS DISTRIBUTION (KG):** | **LF** | 445.00 | **RF** | 438.50 | |
| | **LR** | 275.00 | **RR** | 255.00 | |

**DESCRIBE ANY DAMAGE TO VEHICLE PRIOR TO TEST:**




| | | | | | |
|---|---|---|---|---|---|
| **Engine Type:** | 6CYL | **Optional Equipment:** | | **Dummy Data:** | |
| **Engine CID:** | 3 | | | **Type:** | |
| **Transmission Type** | | | | **Mass:** | |
| | [X] **Auto** | | | **Seat Position:** | |
| | [ ] **Manual** | | | | |

**GEOMETRTY - (CM)**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **A** | 178.50 | **D** | 145.00 | **G** | 87.50 | **K** | 55.00 | **N** | 155.20 | **Q** | 43.80 |
| **B** | 99.00 | **E** | 117.00 | **H** | 32.00 | **L** | 10.80 | **O** | 157.00 | **R** | |
| **C** | 276.00 | **F** | 492.00 | **J** | 72.50 | **M** | 28.20 | **P** | 63.50 | **S** | |

| **MASS - (KG)** | **CURB** | **TEST INERTIAL** | **GROSS STATIS** |
|---|---|---|---|
| **M1** | 928.50 | 883.50 | |
| **M2** | 457.00 | 530.00 | |
| **M3** | 1,385.50 | 1,414.00 | |

# VEHICLE PARAMETERS

**Veh No:** Target-Explorer **Test No:** 10011 **Date:** 08/05/10

**Make:** Ford
**Model:** Explorer
**Year:** 1995
**Color:** Red
**Engine:** 4
**Vin No.:** 1FMCV24X65SUB74635

**Measured Curb mass (Kg)**
**LF:** 488.50
**RF:** 453.50
**LR:** 408.50
**RR:** 371.50

**Location of Vehicle CG (cm)**
**X-Axis (from LF to LR):** 118.70
**Y-Axis (From LF to RF):** 68.80
**Z-Axis (From Ground):** 34.10

**Measured Test Inertial Mass (Kg)**
**LF:** 515.00
**RF:** 466.50
**LR:** 439.50
**RR:** 391.00

**Location of CG Accelerometer (cm)**
**X-Axis (from LF to LR):** 95.30
**Y-Axis (From LF to RF):** 75.50
**Z-Axis (From Ground):** 61.50

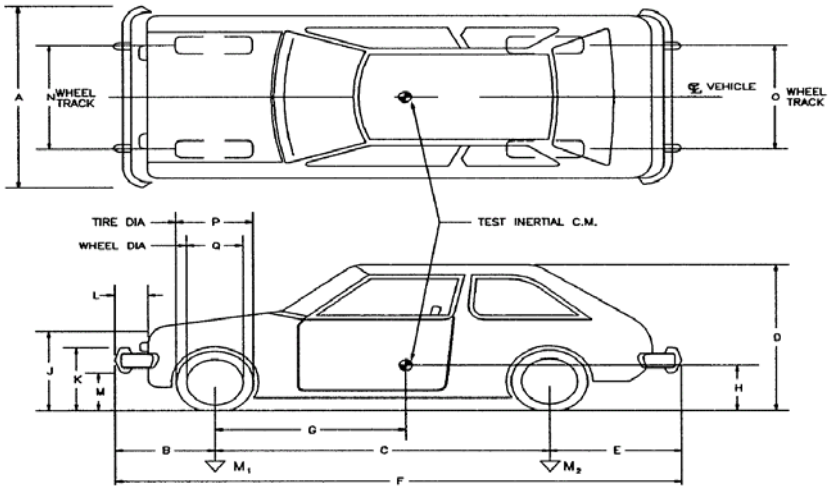
| | Items Removed | Mass (Kg) | Added | Mass (Kg) |
|---|---|---|---|---|
| 1 | Oil | 4.00 | Battery Box | 15.00 |
| 2 | Trans Fluid | 3.50 | Data Acquisition | 6.00 |
| 3 | Antifreeze | 10.50 | Brake System | 5.50 |
| 4 | | | Dummy | 81.50 |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| 12 | | | | |
| | **Total Mass Removed (Kg) =** | 18.00 | **Total Mass Added (Kg) =** | 108.00 |

**Measured Curb Mass =** 1,722.00
**Removed Total =** 18.00
**Stripped Vehicle Mass =** 1,704.00
**Added Mass =** 108.00
**Calculated Test Inertial Mass =** 1,812.00
**Measured Test Inertial Mass =** 1,812.00

***All weights are in Kg***

| | | | | | |
|---|---|---|---|---|---|
| **TEST NO.:** | 10011 | **DATE:** | 8/5/2010 | **ODOMETER:** | 203660 |
| **MAKE:** | Ford | **MODEL:** | Explorer | **YEAR:** | 1995 |
| **VIN NO.:** | 1FMCU24X6SUB74635 | **TIRE SIZE:** | P235 75R15 | | |
| **TIRE INFLATION PRESSURE:** | 32 | | | | |
| **MASS DISTRIBUTION (KG):** | **LF** | 515.00 | **RF** | 466.50 | |
| | **LR** | 439.50 | **RR** | 391.00 | |

**DESCRIBE ANY DAMAGE TO VEHICLE PRIOR TO TEST:**




| | | | | | |
|---|---|---|---|---|---|
| **Engine Type:** | 6 CYL | **Optional Equipment:** | | **Dummy Data:** | |
| **Engine CID:** | 4 | | | **Type:** | |
| **Transmission Type** | | | | **Mass:** | |
| | [X] **Auto** | | | **Seat Position:** | |
| | [ ] **Manual** | | | | |

**GEOMETRTY - (CM)**

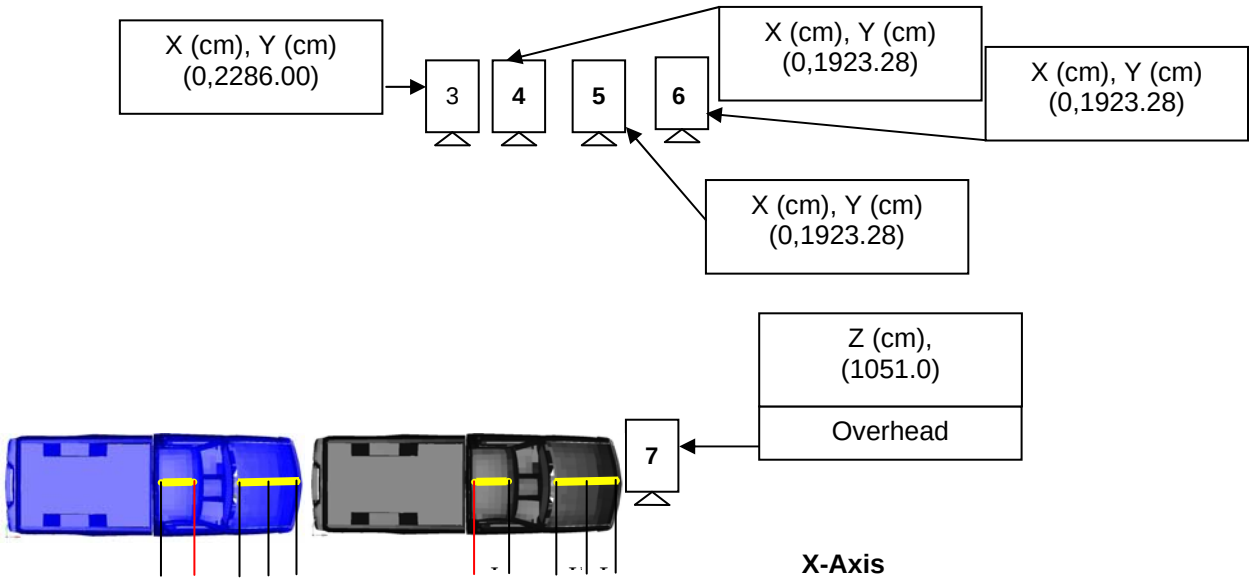
| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **A** | 172.00 | **D** | 169.50 | **G** | 95.30 | **K** | 65.30 | **N** | 145.50 | **Q** | 41.60 |
| **B** | 80.20 | **E** | 102.30 | **H** | 61.50 | **L** | 8.80 | **O** | 149.00 | **R** | |
| **C** | 259.00 | **F** | 441.50 | **J** | 103.50 | **M** | 33.10 | **P** | 72.00 | **S** | |

| **MASS - (KG)** | **CURB** | **TEST INERTIAL** | **GROSS STATIS** |
|---|---|---|---|
| **M1** | 942.00 | 981.50 | |
| **M2** | 780.00 | 830.50 | |
| **M3** | 1,722.00 | 1,812.00 | |

# CAMERA PARAMETERS

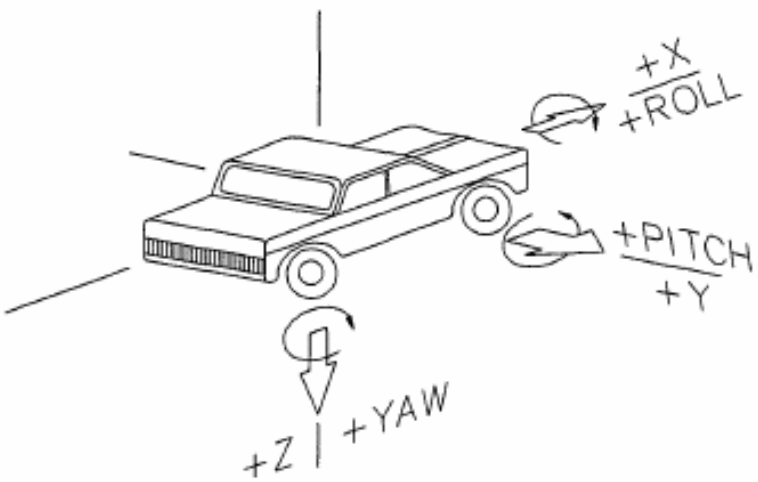
| NO. | CAMERA | LENS | LENS (MM) | RESOLUTION (PIXELS) | SPEED (FPS) | LOCATION |
|---|---|---|---|---|---|---|
| 1 | K3R | Nikon | 25 | 1280X1024 | 500 | Right Perp |
| 2 | CI | Canon | 16-100 | 640X480 | 500 | Right Perp Close |
| 3 | K3 | Nikon | 25 | 1280X1024 | 500 | Left Perp |
| 4 | K3 | Nikon | 50 | 1280X1024 | 500 | Left Perp Close 1 |
| 5 | CI | Toyo Optics | 12.5-75 | 640X480 | 500 | Left Perp Close 2 |
| 6 | CI | Toyo Optics | 12.5-75 | 640X480 | 500 | Left Perp Close 3 |
| 7 | K3R | Nikon | 14 | 1280X1024 | 500 | Overhead |

# CAMERA PARAMETERS



## ACCELEROMETERS LOCATIONS TAURAS

| CH. | LOCATION | X (cm) From frt. axle | Y (cm) From lft frt. hub | Z (cm) From ground | SERIAL NO. | AXIS |
|---|---|---|---|---|---|---|
| 1 | Center of Gravity | 117.20 | 78.30 | 37.70 | 6DX0013 ACC1 | X |
| 2 | Center of Gravity | 117.20 | 78.30 | 37.70 | 6DX0013 ACC2 | Y |
| 3 | Center of Gravity | 117.20 | 78.30 | 37.70 | 6DX0013 ACC3 | Z |
| 4 | Center of Gravity | 117.20 | 78.30 | 37.70 | 6DX0013 ARS1 | Roll |
| 5 | Center of Gravity | 117.20 | 78.30 | 37.70 | 6DX0013 ARS2 | Pitch |
| 6 | Center of Gravity | 117.20 | 78.30 | 37.70 | 6DX0013 ARS3 | Yaw |
| 7 | Center of Gravity | 117.20 | 78.30 | 37.70 | D12130 | X |
| 8 | Center of Gravity | 117.20 | 78.30 | 37.70 | D12748 | Y |
| 9 | Center of Gravity | 117.20 | 78.30 | 37.70 | D12899 | Z |



# ACCELEROMETERS LOCATIONS EXPLORER

| CH. | LOCATION | X (cm) From frt. axle | Y (cm) From lft frt. hub | Z (cm) From ground | SERIAL NO. | AXIS |
|---|---|---|---|---|---|---|
| 1 | Center of Gravity | 124.60 | 76.80 | 62.20 | 6DX0014 ACC1 | X |
| 2 | Center of Gravity | 124.60 | 76.80 | 62.20 | 6DX0014 ACC2 | Y |
| 3 | Center of Gravity | 124.60 | 76.80 | 62.20 | 6DX0014 ACC3 | Z |
| 4 | Center of Gravity | 124.60 | 76.80 | 62.20 | 6DX0014 ARS1 | Roll |
| 5 | Center of Gravity | 124.60 | 76.80 | 62.20 | 6DX0014 ARS2 | Pitch |
| 6 | Center of Gravity | 124.60 | 76.80 | 62.20 | 6DX0014 ARS3 | Yaw |
| 7 | Center of Gravity | 124.60 | 76.80 | 62.20 | 6DX0015 ACC1 | X |
| 8 | Center of Gravity | 124.60 | 76.80 | 62.20 | 6DX0015 ACC2 | Y |
| 9 | Center of Gravity | 124.60 | 76.80 | 62.20 | 6DX0015 ACC3 | Z |
| 10 | Center of Gravity | 124.60 | 76.80 | 62.20 | 6DX0015 ARS1 | Roll |
| 11 | Center of Gravity | 124.60 | 76.80 | 62.20 | 6DX0015 ARS2 | Pitch |
| 12 | Center of Gravity | 124.60 | 76.80 | 62.20 | 6DX0015 ARS3 | Yaw |