

REPORT NUMBER: SPNCAP-CAL-21-002

**NEW CAR ASSESSMENT PROGRAM (NCAP)
SIDE IMPACT POLE TEST**

**General Motors LLC
2021 Cadillac XT6
SUV**

NHTSA No: M20210103

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



March 18, 2021

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
MAIL CODE: NRM-110
1200 NEW JERSEY AVE SE, ROOM W43-410
WASHINGTON, D.C. 20590**

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Date: March 18, 2021

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Date: March 18, 2021

FINAL REPORT ACCEPTANCE BY OCWS:

Division Chief, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date: _____

COTR, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date: _____

TECHNICAL REPORT DOCUMENTATION PAGE

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| 4. Title and Subtitle Final Report of New Car Assessment Program Side Impact Pole Testing of 2021 Cadillac XT6 SUV NHTSA No.: M20210103 | | 5. Report Date March 18, 2021 | 6. Performing Organization Code CAL | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 9. Performing Organization Name and Address Calspan Corporation Transportation Test Operation P.O. Box 400 Buffalo, New York 14225 | | 10. Work Unit No. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 15. Supplementary Notes | | 13. Type of Report and Period Covered: Final Test Report, January 12, 2021 - March 18, 2021 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16. Abstract A 32.20 km/h (20 mph), 75° oblique impact Side NCAP Test was conducted on the subject 2021 Cadillac XT6 SUV in accordance with the specifications of the Office of Crashworthiness Standards Side NCAP Pole Laboratory Test Procedure for the generation of consumer information on vehicle side pole crash protection. This test was conducted at Calspan Corporation's Transportation Test Operations facility in Buffalo, New York on January 12, 2021. The impact velocity of the vehicle was 32.22 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle was 21°C. The target vehicle's maximum post-test static crush was 362 mm located at level 3. The test vehicle's occupant performance data is as follows: | | 14. Sponsoring Agency Code NRM-100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th colspan="3">Driver ATD (SID-IIs) (Serial No. 300)</th> </tr> <tr> <th>Units</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td> <td></td> <td>1000</td> <td>282.873</td> </tr> <tr> <td>Resultant Lower Spine Acceleration</td> <td>G</td> <td>82</td> <td>43.072</td> </tr> <tr> <td>Total Pelvic Force (sum of acetabular and iliac forces)</td> <td>N</td> <td>5525</td> <td>2782.838</td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td>mm</td> <td>38</td> <td>35.893</td> </tr> <tr> <td>Maximum Abdomen Rib Deflection</td> <td>mm</td> <td>45</td> <td>40.024</td> </tr> </tbody> </table> | | Measurement Description | Driver ATD (SID-IIs) (Serial No. 300) | | | Units | Threshold | Result | Head Injury Criteria (HIC ₃₆) | | 1000 | 282.873 | Resultant Lower Spine Acceleration | G | 82 | 43.072 | Total Pelvic Force (sum of acetabular and iliac forces) | N | 5525 | 2782.838 | Maximum Thoracic Rib Deflection | mm | 38 | 35.893 | Maximum Abdomen Rib Deflection | mm | 45 | 40.024 | <p>The two doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.</p> | |
| Measurement Description | Driver ATD (SID-IIs) (Serial No. 300) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Units | Threshold | Result | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Head Injury Criteria (HIC ₃₆) | | 1000 | 282.873 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Resultant Lower Spine Acceleration | G | 82 | 43.072 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Pelvic Force (sum of acetabular and iliac forces) | N | 5525 | 2782.838 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum Thoracic Rib Deflection | mm | 38 | 35.893 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum Abdomen Rib Deflection | mm | 45 | 40.024 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17. Key Words New Car Assessment Program (NCAP) Side Impact Pole Part 572V SID-IIs | | 18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division, 1200 New Jersey Ave. SE Washington, D.C. 20590 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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SECTION 1

TEST PURPOSE AND PROCEDURE

This side impact test was conducted as part of the MY 2021 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-14-D-00352L. The purpose of this test is to generate comparative side impact performance in a 2021 Cadillac XT6 SUV. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Side NCAP Pole Laboratory Test Procedure, dated March 2020.

SECTION 2

SUMMARY OF TEST RESULTS

A rigid pole side impact test was conducted on a 2021 Cadillac XT6 SUV. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.22 km/h. The test was conducted by Calspan Corporation's Transportation Test Operations facility in Buffalo, New York on January 12, 2021. Pre-test and post-test photographs of the test vehicle and side impact dummy (SID-IIs) are included in Appendix A of this report.

One Part 572V (SID-IIs) dummy was placed in the driver designated seating position according to instructions specified in the OCWS Side NCAP Pole Laboratory Test Procedure, dated March 2020. The side impact event was documented by 11 cameras. Camera locations and other pertinent camera information are included on page 3-11 in this report.

The Part 572V (SID-IIs) dummy was instrumented accordingly:

Head CG tri-axial accelerometers

Thorax upper, middle, and lower rib displacement potentiometers

Abdomen upper and lower rib displacement potentiometers

Lower spine tri-axial accelerometers

Iliac load cell

Acetabulum load cell

Appendix B contains the dummy response data. Dummy configuration and performance verification data can be found in Appendix C of this report. Appendix D identifies all serial numbers, manufacturers, and calibration dates for test equipment, dummy sensors, potentiometers, and load cells used to collect data during the test.

Injury readings for the SID-IIs dummy were recorded as follows:

INJURY READINGS

| Measurement Description | Driver ATD (SID-IIs) | | |
|---|----------------------|------|----------|
| | Units | IARV | Result |
| Head Injury Criteria (HIC ₃₆) | | 1000 | 282.873 |
| Resultant Lower Spine Acceleration | g | 82 | 43.072 |
| Total Pelvic Force (sum of acetabular and iliac forces) | N | 5525 | 2782.838 |
| Maximum Thoracic Rib Deflection | mm | 38* | 35.893 |
| Maximum Abdominal Rib Deflection | mm | 45* | 40.024 |

*Proposed IARV

Supplemental restraint information was recorded as follows:

SUPPLEMENTAL RESTRAINT INFORMATION

| Restraint Type | Left Front (Driver) Occupant Location 1 | | Left Rear (Passenger) Occupant Location 4 | |
|------------------------------|--|----------|--|----------|
| | Mounted | Deployed | Mounted | Deployed |
| Frontal Airbag | Yes | Yes | | |
| Knee Airbag | Yes | Yes | | |
| Side Airbag 1 - Curtain | Yes | Yes | Yes | Yes |
| Side Airbag 2 – Torso/Pelvis | Yes | Yes | No | N/A |
| Seat Belt Pretensioner | Yes | Yes | No | N/A |
| Seat Belt Load Limiter | Yes | Yes | No | N/A |
| Other | | | | |

GENERAL COMMENTS:

- P1 serial number – 300

Data Anomalies:

- Left Middle A-Pillar Y Acceleration, Questionable data after 50.9 ms

SECTION 3
OCCUPANT AND VEHICLE INFORMATION

This section contains information reporting for the following Data Sheets:

Data Sheet No. 1 – General Test and Vehicle Parameter Data

Data Sheet No. 2 – Seat, Seat Belt, Steering Wheel Adjustment and Fuel Systems Data

Data Sheet No. 3 – Dummy Longitudinal Clearance Dimensions

Data Sheet No. 4 – Dummy Lateral Clearance Dimensions

Data Sheet No. 5 – Camera and instrumentation Data

Data Sheet No. 6 – Vehicle Accelerometer Data

Data Sheet No. 7 – Rigid Pole Load Cell Data

Data Sheet No. 8 – Post-Test Observations

Data Sheet No. 9 – Test Vehicle Profile Measurements

Data Sheet No. 10 – Test Vehicle Exterior Crush Measurements

Data Sheet No. 11 – Vehicle Damage Profile Distances

Data Sheet No. 12 – FMVSS No. 301 Static Rollover Results

Data Sheet No. 13 – Dummy / Vehicle Temperature and Humidity Stabilization Data

**DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2021 Cadillac XT6 SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210103
 Test Date: 1/12/2021

TEST VEHICLE INFORMATION AND OPTIONS

| | |
|--------------------------|-------------------|
| NHTSA No. | M20210103 |
| Model Year | 2021 |
| Make | Cadillac |
| Model | XT6 |
| Body Style | SUV |
| VIN | 1GYKPAR40MZ126631 |
| Body Color | Blue |
| Odometer Reading (km/mi) | 5 miles |
| Engine Displacement (L) | 2.0 |
| Type / No. Cylinders | I4 |
| Engine Placement | Transverse |
| Transmission Type | Automatic |
| Transmission Speeds | 9-Speed |
| Overdrive | Yes |
| Final Drive | Front Wheel Drive |
| Roof Rack | No |
| Sunroof / T-Top | Yes |
| Running Boards | No |
| Tilt Steering Wheel | Yes |
| Power Seats | Yes |
| Anti-Lock Brakes (ABS) | Yes |

| | |
|-----------------------------------|-----|
| Traction Control System (TCS) | Yes |
| Auto-Leveling System | No |
| Automatic Door Locks (ADL) | Yes |
| Power Window Auto-Reverse | Yes |
| Other Optional Feature | - |
| Driver Front Airbag | Yes |
| Driver Curtain Airbag | Yes |
| Driver Head/Torso Airbag | No |
| Driver Torso Airbag | No |
| Driver Torso / Pelvis Airbag | Yes |
| Driver Pelvis Airbag | No |
| Driver Knee Airbag | Yes |
| Rear Pass. Curtain Airbag | Yes |
| Rear Pass. Head / Torso Airbag | No |
| Rear Pass. Torso Airbag | No |
| Rear Pass. Torso / Pelvis Airbag | No |
| Rear Pass. Pelvis Airbag | No |
| Driver Seat Belt Pretensioner | Yes |
| Rear Pass. Seat Belt Pretensioner | No |
| Driver Load Limiter | Yes |
| Rear Pass. Load Limiter | No |
| Other Safety Restraint | - |

Does owner's manual provide instructions to turn off automatic door locks?

No

DATA FROM CERTIFICATION LABEL

| | |
|---------------------|--------------------|
| Manufactured By | General Motors LLC |
| Date of Manufacture | 10/20 |
| Vehicle Type | M.P.V. |

| | |
|-----------------|------|
| GVWR (kg) | 2722 |
| GAWR Front (kg) | 1350 |
| GAWR Rear (kg) | 1545 |

VEHICLE SEATING AND WEIGHT CAPACITY DATA

| Measured Parameter | Front | Rear | Third | Total |
|-----------------------------------|-------|------|-------|--------|
| Designated Seating Capacity (DSC) | 2 | 3 | 2 | 7 |
| Capacity Weight (VCW) (kg) | | | | 723 |
| DSC X 68.04 kg | | | | 476.28 |
| Cargo Weight (RCLW) (kg) | | | | 136 |

(A)
(B)
(A-B)

VEHICLE SEAT TYPE

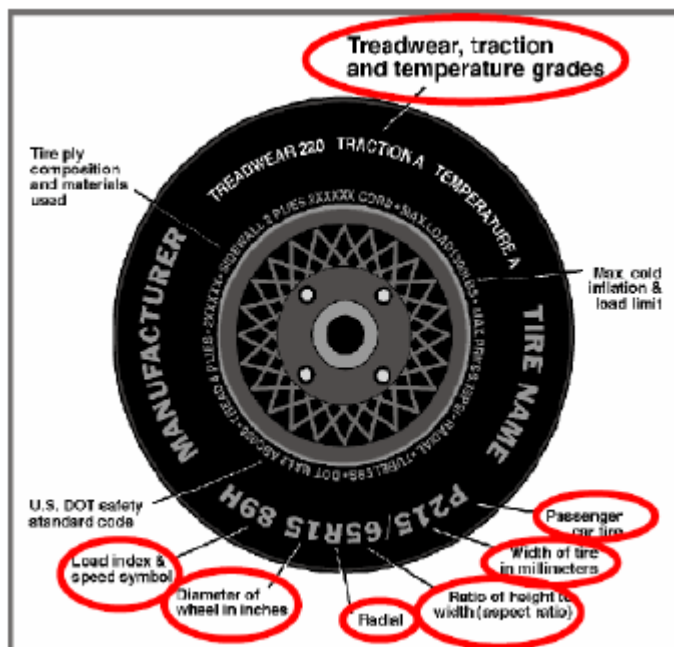
| Seating Location | Type of Seat Pan | | | | Type of Seat Back | | |
|-------------------------|------------------|-------|-------------|-----------|-------------------|------------|---------|
| | Bucket | Bench | Split Bench | Contoured | Fixed | Adjustable | |
| | | | | | | W/ Lever | W/ Knob |
| Front Seat | X | | | | | | X |
| Rear or Second Row Seat | | | X | | | X | |
| Third Row seat | | X | | | X | | |

DATA SHEET NO. 1 ... (CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2021 Cadillac XT6 SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210103
 Test Date: 1/12/2021

Collected for year, make, model, & VIN, all items circled in red, tire manufacturer and tire name.



VEHICLE TIRE INFORMATION

| Measured Parameter | Front | Rear |
|-----------------------------|--------------------------------------|--------------------------------------|
| Maximum Tire Pressure (kPa) | 300 | 300 |
| Cold Pressure (kPa) | 240 | 240 |
| Recommended Tire Size | 235/65R18 | 235/65R18 |
| Tire Size on Vehicle | 235/65R18 | 235/65R18 |
| Tire Manufacturer | Michelin | Michelin |
| Tire Model | Primacy Tour | Primacy Tour |
| Treadwear | 540 | 540 |
| Traction | A | A |
| Temperature Grades | A | A |
| Tire Plies Sidewall | 2 Polyester | 2 Polyester |
| Tire Plies Body | 2 Polyester, 1 Polyamide, 2 Steel | 2 Polyester, 1 Polyamide, 2 Steel |
| Load Index/Speed Symbol | 106H | 106H |
| Tire Material | Rubber | Rubber |
| DOT Safety Code Left | M3MB01MX4020 | M3MB01MX4020 |
| DOT Safety Code Right | M3MB01MX4020 | M3MB01MX4020 |

**DATA SHEET NO. 1 ... (CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2021 Cadillac XT6 SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210103
Test Date: 1/12/2021

TIRE PRESSURES

| | Units | LF | RF | LR | RR |
|----------------|-------|-----|-----|-----|-----|
| As Delivered | kPa | 264 | 268 | 262 | 620 |
| Tire Placard | kPa | 240 | 240 | 240 | 240 |
| Owner's Manual | kPa | 240 | 240 | 240 | 240 |
| As Tested | kPa | 240 | 240 | 240 | 240 |

TEST VEHICLE AXLE WEIGHTS

| | Units | As Delivered (UVW) | | | As Tested (ATW) | | | Fully Loaded | | |
|--------|-------|--------------------|-------|-------|-----------------|------|-------|--------------|------|-------|
| | | Front | Rear | Total | Front | Rear | Total | Front | Rear | Total |
| Left | kg | 556.5 | 439 | | 560 | 523 | | 574 | 531 | |
| Right | kg | 535 | 429.5 | | 540 | 516 | | 537 | 508 | |
| Ratio | % | 55.7 | 44.3 | | 51.4 | 48.6 | | 51.7 | 48.3 | |
| Totals | kg | 1091.5 | 868.5 | 1960 | 1100 | 1039 | 2139 | 1111 | 1039 | 2150 |

TARGET TEST WEIGHT CALCULATION

| Measured Parameter | Units | Value | |
|---|-------|-------|---------|
| Total As Delivered Weight (UVW) | kg | 1960 | (A) |
| Actual Weight of 1 P572V (SID-IIs) ATD Used | kg | 50 | (B) |
| Rated Cargo / Luggage Weight (RCLW) | kg | 136 | (C) |
| Calculated Vehicle Target Weight (TVTW) | kg | 2146 | (A+B+C) |

Does the measured As Test Vehicle Weight lie within the required weight range
(i.e. Calculated Test Vehicle Target Weight – 4.5 kg to – 9 kg)? Yes No

TEST VEHICLE ATTITUDES AND CG

| Measurement Description | Units | As Delivered | As Tested | Fully Loaded | Meets Rqmt*** |
|--|-------|--------------|-----------|--------------|---------------|
| Driver Door Sill Angle (front-to-rear)* | Deg | -0.75 | -0.50 | -0.45 | Yes |
| Front Passenger Sill Angle (front-to-rear)* | Deg | -1.00 | -0.50 | -0.50 | Yes |
| Front Bumper-Line Angle (left-to-right)** | Deg | -0.25 | -0.20 | -0.15 | Yes |
| Rear Bumper-Line Angle (left-to-right)** | Deg | +0.30 | 0.00 | -0.15 | Yes |
| Vehicle CG (Aft of Front Axle) | mm | 1269 | 1391 | 1384 | |
| Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline) | mm | 13 | 11 | 24 | |

* ND = Nose Down (-), NU = Nose Up (+)

** LD = Left Down (-), LU = Left Up (+)

*** The "As Tested" vehicle attitude measurements must be equal to or between the "As Delivered" and "Fully Loaded" vehicle attitude measurements. Indicate "Yes" or "No" for Meets Requirement"

**DATA SHEET NO. 1 ... (CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2021 Cadillac XT6 SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210103
 Test Date: 1/12/2021

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

| Component Description | Weight (kg) |
|---------------------------|-------------|
| Trunk Carpeting | 11 |
| Spare Tire | 18 |
| Jack | 4 |
| Third Row Seats | 38 |
| | |
| Ballast / Equipment Added | 145 |

| | |
|--|-----|
| Test Height – Adjustable Suspension Setting, if Applicable | N/A |
|--|-----|

Test Surface Markings

| | Distance from 75° Impact Location Line (mm) |
|-------------------|---|
| Fore 25 mm target | 952 |
| Aft 25 mm target | 953 |

DATA SHEET NO. 2
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEMS DATA

Test Vehicle: 2021 Cadillac XT6 SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210103
 Test Date: 1/12/2021

SEAT POSITIONING

The driver's seat, front center seat (if applicable), and right front passenger's seat should be set to the forward-most, mid-height, mid-angle position. The struck-side rear passenger's seat, rear center seat, and non-struck side rear passenger's seats should be set to the rear-most, lowest, mid-angle position.

SCRL ANGLE RANGE

| Seat | SCRL (°) | | |
|---------------------------|----------------|-------|-------|
| | Max | Min | Mid |
| Driver Seat | 18.3 | 10.3 | 14.3 |
| Front Passenger Seat | Not Adjustable | | |
| Front Center Seat | - | - | - |
| Struck Side Rear Seat | Fixed | Fixed | Fixed |
| Non-Struck Side Rear Seat | Fixed | Fixed | Fixed |
| Rear Center Seat | Fixed | Fixed | Fixed |

SEAT HEIGHT AND ANGLE

| Seat | As Tested SCRL Angle (Mid) (°) | As Tested SCRP Height (mm) | SCRP Height Position | SCRP Height (mm) | | |
|---------------------------|--------------------------------|----------------------------|----------------------|------------------|----------------|--------------|
| | | | | Rearmost | Mid-Fore / Aft | Forward-Most |
| Driver Seat | 14.3 | 28.5 | Max | 56 | 57 | 58 |
| | | | Mid | 28 | 28.5 | 29 |
| | | | Min | 0 | 1 | 2 |
| Front Passenger Seat | Not Adjustable | | Max | - | - | - |
| | | | Mid | - | - | - |
| | | | Min | - | - | - |
| Front Center Seat | N/A | N/A | Max | - | - | - |
| | | | Mid | - | - | - |
| | | | Min | - | - | - |
| Struck Side Rear Seat | Fixed | Fixed | Max | - | - | - |
| | | | Mid | - | - | - |
| | | | Min | - | - | - |
| Non-Struck Side Rear Seat | Fixed | Fixed | Max | - | - | - |
| | | | Mid | - | - | - |
| | | | Min | - | - | - |
| Rear Center Seat | Fixed | Fixed | Max | - | - | - |
| | | | Mid | - | - | - |
| | | | Min | - | - | - |

DATA SHEET NO. 2 ... (CONTINUED)
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEMS DATA

Test Vehicle: 2021 Cadillac XT6 SUV
 Test Program: NCAP Side Pole Impact Test

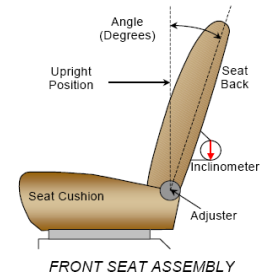
NHTSA No.: M20210103
 Test Date: 1/12/2021

SEAT FORE / AFT POSITION

| Seat | Total Fore / Aft Travel | | Test Position from Forward most Position | |
|---------------------------|-------------------------|-----------|--|----------|
| | mm | Detents* | mm | Detents* |
| Driver Seat | 245 | N/A | 0 | N/A |
| Front Passenger Seat | 245 | N/A | 0 | N/A |
| Front Center Seat | - | - | - | - |
| Struck Side Rear Seat | 140 | 15 (0-14) | 140 | 14 |
| Non-Struck Side Rear Seat | 140 | 15 (0-14) | 140 | 14 |
| Rear Center Seat | 140 | 15 (0-14) | 140 | 14 |

SEAT BACK ANGLE ADJUSTMENT

The driver's seat back is positioned such that the dummy's head is level. The front center and front passenger's seat backs are positioned in a similar manner as the driver's seat back. The struck-side rear passenger seat back is positioned in accordance with the information provided by the manufacturer on Form No. 1 for the 5th percentile female dummy in a Side NCAP MDB test. The rear center and non-struck side rear passenger's seat back are set to match the struck-side rear seat back.



| Seat | Total Seat Back Angle Range | | Test Position from Most Upright | |
|----------------------------|-----------------------------|----------|---------------------------------|----------|
| | Degrees | Detents* | Degrees | Detents* |
| Driver Seat w/Seated Dummy | 65.8 | N/A | 26.3 | N/A |
| Front Passenger Seat | 56.7 | N/A | 26.3 | N/A |
| Front Center Seat | - | - | - | - |
| Struck Side Rear Seat | 13.2 | 7 | 14.4 | 0 |
| Non-Struck Side Rear Seat | 13.2 | 7 | 14.4 | 0 |
| Rear Center Seat | 13.2 | 7 | 14.4 | 0 |

SEAT BELT ANCHORAGE ADJUSTMENT

Seat belt anchorages are adjusted in accordance with the information provided by the manufacturer on Form No. 1. Zero is defined as the uppermost detent

| Seat | Total # of Positions | Placed in Position # |
|-------------|----------------------|----------------------|
| Driver Seat | 4 (0-3) | 0 |

HEAD RESTRAINT ADJUSTMENT

The driver's head restraint is adjusted to the lowest and most full forward in-use position.

| Seat | Total # of Positions | Placed in Position # |
|-------------|----------------------|----------------------|
| Driver Seat | 6 (0-5) | Lowermost |

DATA SHEET NO. 2 ... (CONTINUED)
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEMS DATA

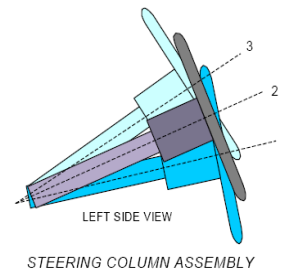
Test Vehicle: 2021 Cadillac XT6 SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210103
 Test Date: 1/12/2021

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the center of its geometric locus it describes when it moves through its full range of motion.

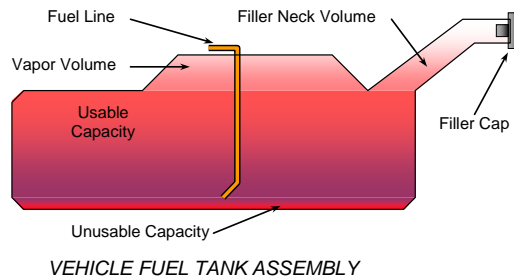
| | Degrees | Fore / Aft Position (mm) |
|-----------------------------------|---------|--------------------------|
| Lowermost – Position 1 | 18.9 | |
| Geometric Center – Position 2 | 21.2 | |
| Uppermost – Position 3 | 23.3 | |
| Telescoping Steering Wheel Travel | | 70 |
| Test Position | 21.2 | 35 |



FUEL PUMP

Describe the fuel pump type, details about how it operates, and the location of the fuel filler neck.

The vehicle is equipped with an electric fuel pump.
The fuel filler neck is on the left side of the vehicle.
The pump creates positive pressure in the fuel lines, pushing the gasoline to the engine. See form 1 for more information.



FUEL TANK CAPACITY DATA

| Description | Liters |
|---|--------|
| Usable Capacity of "Standard Tank" - see Form No. 1 | 73.4 |
| Usable Capacity of "Optional Tank" - see Form No. 1 | N/A |
| Usable Capacity of "Standard Tank" - see Owner's Manual | 73.4 |
| Usable Capacity of "Optional Tank" - see Owner's Manual | N/A |
| 93% of Usable Capacity | 68.2 |
| Actual Amount of Solvent Used in Test | 68.2 |
| 1/3 of Usable Capacity | 24.5 |

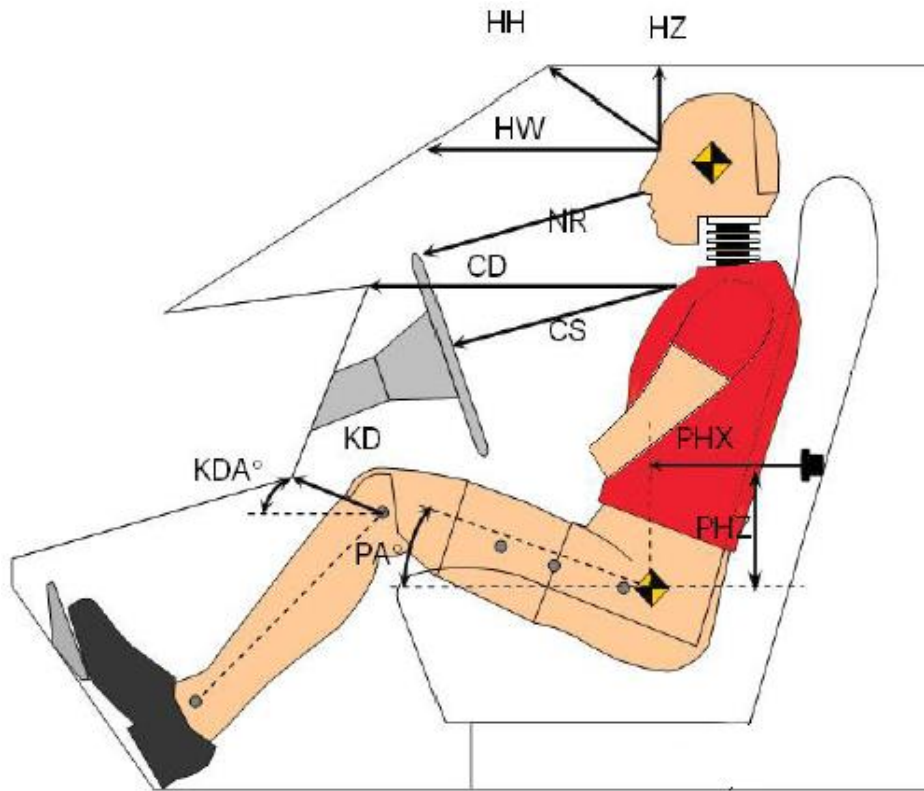
Is the Actual Amount of Solvent Used in the test equal to 93% ±1% of the Usable Capacity stated in Form No. 1?

Yes No

**DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS**

Test Vehicle: 2021 Cadillac XT6 SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210103
 Test Date: 1/12/2021



Left Side View

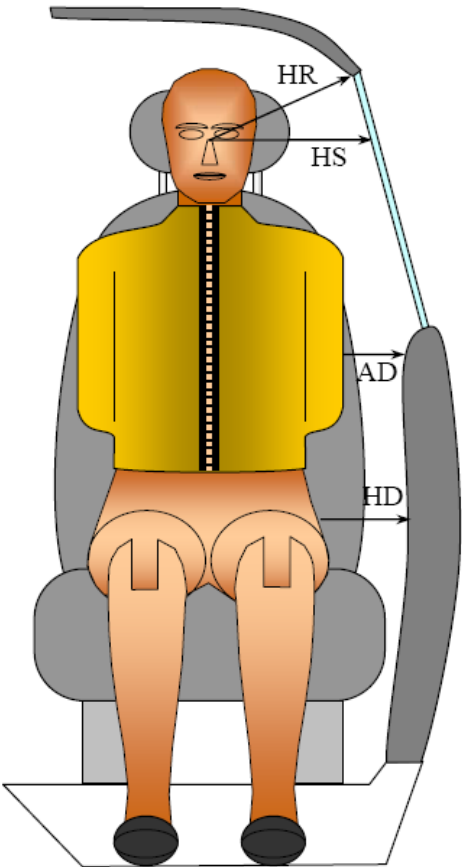
DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

| Driver Code | Description | Driver (Serial No. 300) | |
|-----------------|-------------------------------|----------------------------|-----------|
| | | Length (mm) | Angle (°) |
| HH | Head to Header | 364 | |
| HW | Head to Windshield | 703 | |
| HZ | Head to Roof Liner | 251 | |
| NR | Nose to Rim | 267 | |
| CD | Chest to Dash | 441 | |
| CS | Chest to Steering Wheel | 221 | |
| KD(L) / KDA(L)° | Left Knee to Dash | 158 | 28.5 |
| KD(R) / KDA(R)° | Right Knee to Dash | 158 | 27.1 |
| PAX° | Pelvic Tilt Angle (X-Axis) | | 19.5 |
| PAY° | Pelvic Tilt Angle (Y-Axis) | | 0.3 |
| PHX | Hip Point to Striker (X-Axis) | 325 | |
| PHZ | Hip Point to Striker (Z-Axis) | 82 | |

**DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS**

Test Vehicle: 2021 Cadillac XT6 SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210103
 Test Date: 1/12/2021



FRONT VIEW OF DUMMY

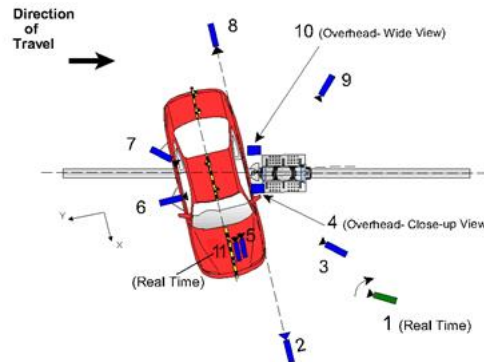
DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

| Code | Measurement Description | Units | Driver - Length (Serial No. 300) |
|------|-------------------------|-------|----------------------------------|
| HR | Head To Side Header | mm | 300 |
| HS | Head to Side Window | mm | 408 |
| AD | Arm to Door | mm | 156 |
| HD | Hip Point to Door | mm | 170 |

**DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA**

Test Vehicle: 2021 Cadillac XT6 SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210103
 Test Date: 1/12/2021



CAMERA LOCATIONS AND DATA

| No. | Camera View | Coordinates (mm) | | | Lens Length (mm) | Operating Frame Rate (fps) |
|-----|--|------------------|-------|-------|------------------|----------------------------|
| | | X | Y | Z | | |
| 1 | Real-time (24 - 30 fps) pan view of impact | | | | Zoom | 60 |
| 2 | Front ground level - impact view | 7690 | 0 | -1283 | 28 | 1000 |
| 3 | Impact side 45° - forward pole view | 5686 | -1234 | -1498 | 24 | 1000 |
| 4 | Overhead Close-up view of impact | 0 | 0 | -9370 | 28 | 1000 |
| 5 | Onboard - dummy front view | | | | 25 | 1000 |
| 6 | Onboard - dummy side view | | | | 12.5 | 1000 |
| 7 | Onboard - dummy rear oblique view | | | | 12.5 | 1000 |
| 8 | Rear ground level - impact view | -9436 | 0 | -1438 | 28 | 1000 |
| 9 | Impact side 45° - rearward pole view | -3775 | -3844 | -1452 | 24 | 1000 |
| 10 | Overhead wide - view of impact | 0 | 0 | -9370 | 12.5 | 1000 |
| 11 | Real-time (24 - 30 fps) - dummy front view | | | | Zoom | 60 |

Notes: Reference - From Point of Impact for X and Y; from Ground for Z
 +X = Forward of vehicle, +Y = Right of vehicle, +Z = Down
 * All measurements accurate to ± 6 mm. Vehicle is at a 75° angle to the rigid pole.

Comments: All cameras operated as intended.

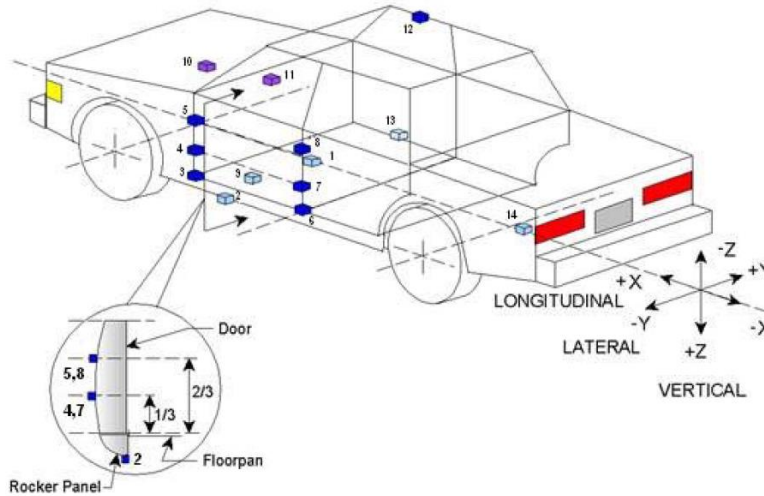
INSTRUMENTATION

| Description | Number of Channels |
|----------------------------------|--------------------|
| Driver Dummy Channels | 16 |
| Vehicle Structure Accelerometers | 18 |
| Pole Load Cells | 8 |
| Total | 42 |

**DATA SHEET NO. 6
VEHICLE ACCELEROMETER DATA**

Test Vehicle: 2021 Cadillac XT6 SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210103
 Test Date: 1/12/2021



TEST VEHICLE ACCELEROMETER LOCATIONS

| No. | Accelerometer Location | Coordinates (mm) | | |
|-----|------------------------|------------------|------|-------|
| | | X | Y | Z |
| 1 | Vehicle CG | 3063 | -3 | 67 |
| 2 | Left Floor Sill | 3140 | -662 | 151 |
| 3 | A-Pillar Sill | 3434 | -641 | 141 |
| 4 | A-Pillar Low | 3538 | -656 | -91 |
| 5 | A-Pillar Mid | 3466 | -645 | -625 |
| 6 | B-Pillar Sill | 2436 | -591 | 185 |
| 7 | B-Pillar Low | 2453 | -689 | -101 |
| 8 | B-Pillar Mid | 2409 | -688 | -371 |
| 9 | Driver Seat Track | 2629 | -564 | 100 |
| 10 | Engine Top | 4094 | 60 | -297 |
| 11 | Firewall | 3936 | 13 | -405 |
| 12 | Right Roof | 2472 | 580 | -1130 |
| 13 | Right Floor Sill | 3134 | 666 | 160 |
| 14 | Rear Floorpan | 1241 | -2 | -17 |

Reference: X – Rear surface of vehicle (+ forward)
 Y – Vehicle centerline (+ to right)
 Z – Ground plane (+ down)

**DATA SHEET NO. 7
RIGID POLE LOAD CELL DATA**

Test Vehicle: 2021 Cadillac XT6 SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210103
Test Date: 1/12/2021

POLE BARRIER



RIGID POLE LOAD CELL LOCATIONS

| ID | Units | Height From Ground |
|-----------|--------------|---------------------------|
| 1 | mm | 200 |
| 2 | mm | 590 |
| 3 | mm | 750 |
| 4 | mm | 1075 |
| 5 | mm | 1260 |
| 6 | mm | 1740 |
| 7 | mm | 1920 |
| 8 | mm | 2300 |

**DATA SHEET NO. 8
POST-TEST OBSERVATIONS**

Test Vehicle: 2021 Cadillac XT6 SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210103
 Test Date: 1/12/2021

TEST DUMMY INFORMATION AND CONTACT POINTS

| Dummy Body Part | Driver Seat Dummy (SID-IIs) |
|-------------------|--------------------------------|
| Face | Curtain Airbag |
| Top of Head | Curtain Airbag |
| Left Side of Head | Curtain Airbag |
| Back of Head | Curtain Airbag & Headrest |
| Left Shoulder | Seatback & Torso/Pelvis Airbag |
| Upper Torso | Seatback & Torso/Pelvis Airbag |
| Lower Torso | Seatback & Torso/Pelvis Airbag |
| Left Hip | Seatpan & Torso/pelvis Airbag |
| Left Knee | Driver Door |

POST-TEST DOOR PERFORMANCE

| Description | Struck Side | | Non-Struck Side | | Rear Hatch/Other |
|---|-------------|------|-----------------|------|------------------|
| | Front | Rear | Front | Rear | |
| Remained Closed and Operational | No | No | Yes | Yes | Yes |
| Total Separation from Vehicle at Hinges or Latches | No | No | No | No | No |
| Latch or Hinge Systems Pulled Out of Their Anchorages | No | No | No | No | No |
| Disengaged from Latched Position | No | No | No | No | No |
| Latch Separated from Striker | No | No | No | No | No |
| Jammed Shut | Yes | Yes | No | No | No |
| If Door Opened at Striker, Width of Opening at Striker (mm) | 0 | 0 | 0 | 0 | 0 |

POST-TEST SEAT PERFORMANCE

| Description | Struck Side | | Non-Struck Side | |
|--|-------------|------|-----------------|------|
| | Front | Rear | Front | Rear |
| Seat Movement Along Seat Track | No | No | No | No |
| Seat Disengagement from Floor Pan | No | No | No | No |
| Seat Back Movement from Initial Position | No | No | No | No |
| Seat Back Collapse | No | No | No | No |

**DATA SHEET NO. 8 ... (CONTINUED)
POST-TEST OBSERVATIONS**

Test Vehicle: 2021 Cadillac XT6 SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210103
 Test Date: 1/12/2021

POST-TEST STRUCTURAL OBSERVATIONS

| Critical Areas of Performance | Observations and Conclusions |
|-------------------------------|----------------------------------|
| Pillar Performance | A-Pillar Buckled |
| Sill Separation | None |
| Windshield Damage | Cracks Throughout |
| Side Window Damage | Driver Window Cracked Throughout |
| Other Notable Effects | None |

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

| Restraint Type | Struck Side Driver | | Struck Side Rear Passenger | |
|------------------------------|--------------------|----------|----------------------------|----------|
| | Mounted | Deployed | Mounted | Deployed |
| Frontal Airbag | Yes | No | | |
| Knee Airbag | Yes | No | | |
| Side Airbag 1 - Curtain | Yes | Yes | Yes | Yes |
| Side Airbag 2 – Torso/Pelvis | Yes | Yes | No | N/A |
| Seat Belt Pretensioner | Yes | Yes | No | N/A |
| Seat Belt Load Limiter | Yes | Yes | No | N/A |
| Other | | | | |

VEHICLE SPEED, VEHICLE ANGLE AT IMPACT AND IMPACT POINT LOCATION DATA

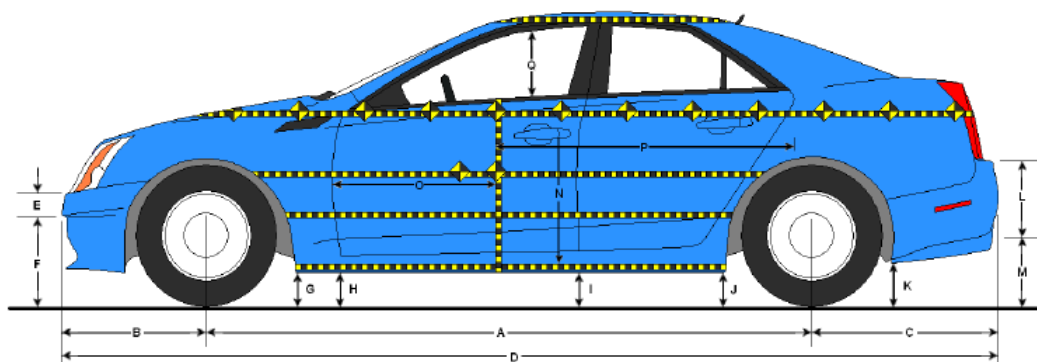
| Measured Parameter | Units | Tolerance | Value |
|--|-------|--------------|-------|
| Vertical Impact Ref Line - Aft of Front Axle, Intended Impact Pt | mm | | 1155 |
| Actual Impact Point - Aft of Front Axle | mm | | 1154 |
| Horizontal Offset (+ forward / - rearward) | mm | +/- 38 * | +1 |
| Angle Between Vehicle's Longitudinal Centerline and Line of Forward Motion | deg | 75 +/- 3 | 75 |
| Trap No. 1 Velocity - Primary | kph | 31.4 to 33.0 | 32.22 |
| Trap No. 2 Velocity - Redundant | kph | 31.4 to 33.0 | 32.29 |

* Of Intended Impact Point

**DATA SHEET NO. 9
TEST VEHICLE PROFILE MEASUREMENTS**

Test Vehicle: 2021 Cadillac XT6 SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210103
 Test Date: 1/12/2021



LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

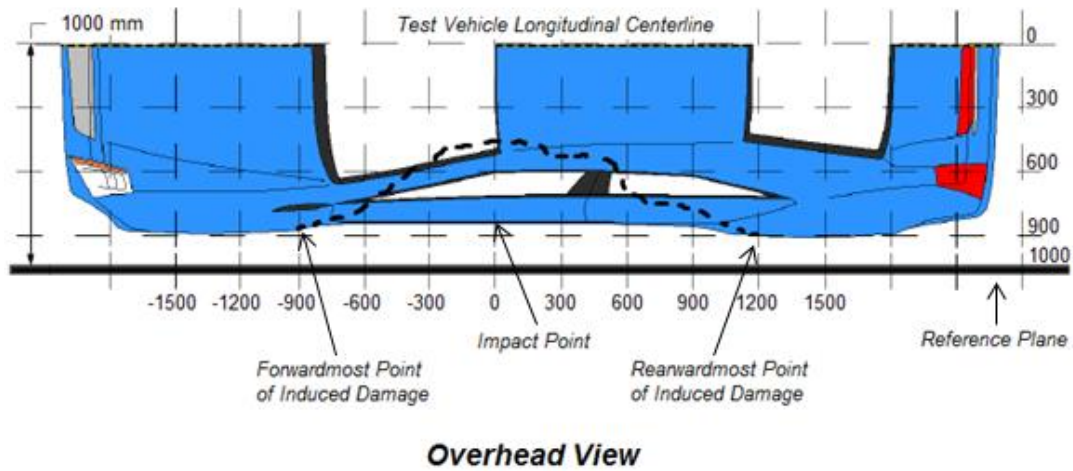
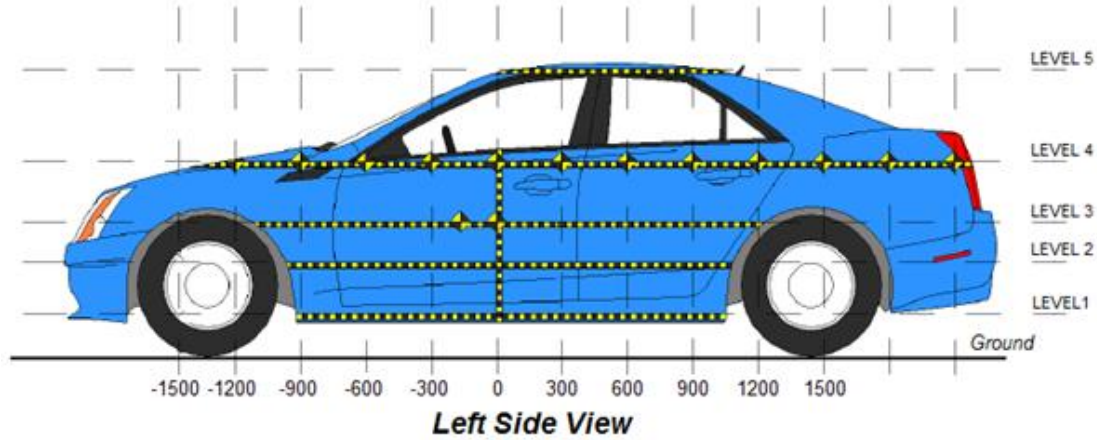
| Code | Description | Pre-Test | Post-Test | Difference |
|------|--|----------|-----------|------------|
| A | Vehicle Wheelbase | 2863 | 2783 | 80 |
| B | Front Axle to FSOV | 1027 | 1069 | -42 |
| C | Rear Axle to RSOV | 1163 | 1171 | -8 |
| D | Total Length at Centerline | 5052 | 5023 | 29 |
| E | Front Bumper Thickness | 135 | 135 | 0 |
| F | Front Bumper Bottom to Ground | 460 | 484 | -24 |
| G | Sill Height at Front Wheel Well | 263 | 255 | 8 |
| H | Sill Height at Front Door Leading Edge | 283 | 278 | 5 |
| I | Sill Height at B-Pillar | 286 | 305 | -19 |
| J1 | Sill Height at Rear Wheel Well | 287 | 310 | -23 |
| J2 | Pinch Weld Height at Rear Wheel Well | 275 | 300 | -25 |
| K | Sill Height Aft of Rear Wheel Well | 265 | 278 | -13 |
| L | Rear Bumper Thickness | 160 | 160 | 0 |
| M | Rear Bumper Bottom to Ground | 500 | 492 | 8 |
| N | Sill Height to Bottom of Front Window Sill | 903 | 906 | -3 |
| O | Front Door Leading Edge to Impact CL | 639 | 553 | 86 |
| P | Rear Door Trailing Edge to Impact CL | 1512 | 1430 | 82 |
| Q | Front Window Opening | 425 | 407 | 18 |
| R | Right Side Length | 4884 | 4876 | 8 |
| S | Left Side Length | 4882 | 4827 | 55 |
| T | Vehicle Width at B-Pillars | 1877 | 1799 | 78 |
| U | Front Wheel Track Width | 1682 | 1685 | -3 |
| V | Rear Wheel Track Width | 1688 | 1690 | -2 |

* All measurements in mm with tolerance of ± 3 mm

DATA SHEET NO. 10
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2021 Cadillac XT6 SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210103
 Test Date: 1/12/2021



MAXIMUM EXTERIOR CRUSH MEASUREMENTS

| Level | Measurement Description | Units | Height Above Ground | Maximum Exterior Static Crush | Distance from Impact |
|-------|-------------------------|-------|---------------------|-------------------------------|----------------------|
| 1 | Sill Top | mm | 333 | 271 | 0 |
| 2 | Occupant Hip Point | mm | 703 | 360 | 0 |
| 3 | Mid - Door | mm | 756 | 362 | 0 |
| 4 | Window Sill | mm | 1100 | 325 | 0 |
| 5 | Window Top | mm | 1652 | 81 | 150 |

NOTE: The above measurements should be taken along the vertical impact reference line. Vehicle measurements forward of the vertical impact reference line are negative.

DATA SHEET NO. 10 ... (CONTINUED)
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2021 Cadillac XT6 SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210103
 Test Date: 1/12/2021

EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL

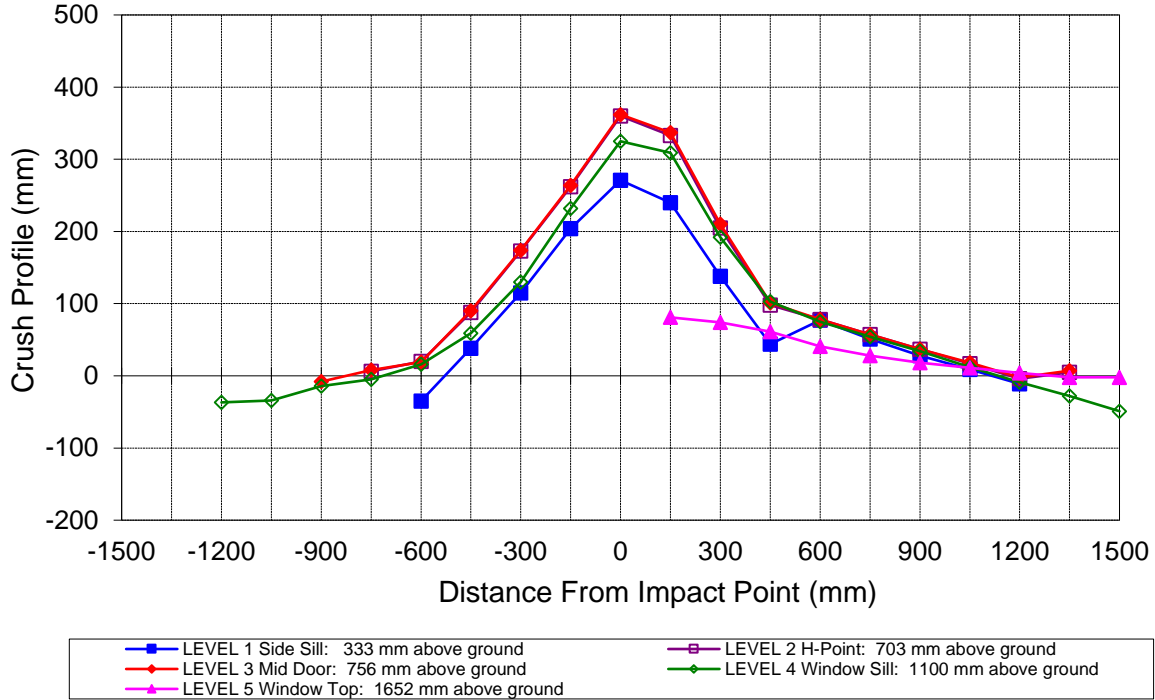
| | Pre-Test | | | | | Post-Test | | | | | Difference | | | | |
|-------|----------|-----|-----|-----|-----|-----------|-----|-----|-----|-----|------------|-----|-----|-----|----|
| | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| -1500 | | | | | | | | | | | | | | | |
| -1350 | | | | | | | | | | | | | | | |
| -1200 | | | | 807 | | | | | 844 | | | | | -37 | |
| -1050 | | | | 818 | | | | | 852 | | | | | -34 | |
| -900 | | | 985 | 826 | | | | 993 | 840 | | | | -8 | -14 | |
| -750 | | 977 | 977 | 838 | | | 971 | 969 | 843 | | | 6 | 8 | -5 | |
| -600 | 927 | 961 | 960 | 850 | | 962 | 941 | 941 | 834 | | -35 | 20 | 19 | 16 | |
| -450 | 913 | 947 | 948 | 847 | | 875 | 859 | 858 | 788 | | 38 | 88 | 90 | 59 | |
| -300 | 908 | 938 | 939 | 868 | | 793 | 765 | 765 | 738 | | 115 | 173 | 174 | 130 | |
| -150 | 903 | 933 | 934 | 878 | | 699 | 671 | 670 | 646 | | 204 | 262 | 264 | 232 | |
| 0 | 900 | 930 | 932 | 887 | | 629 | 570 | 570 | 562 | | 271 | 360 | 362 | 325 | |
| 150 | 896 | 928 | 930 | 895 | 631 | 656 | 595 | 593 | 586 | 550 | 240 | 333 | 337 | 309 | 81 |
| 300 | 892 | 927 | 929 | 891 | 636 | 754 | 722 | 719 | 699 | 562 | 138 | 205 | 210 | 192 | 74 |
| 450 | 889 | 926 | 928 | 904 | 640 | 845 | 828 | 827 | 801 | 579 | 44 | 98 | 101 | 103 | 61 |
| 600 | 889 | 924 | 926 | 907 | 641 | 812 | 846 | 848 | 832 | 600 | 77 | 78 | 78 | 75 | 41 |
| 750 | 887 | 923 | 925 | 907 | 641 | 836 | 866 | 868 | 853 | 613 | 51 | 57 | 57 | 54 | 28 |
| 900 | 885 | 925 | 926 | 906 | 640 | 857 | 888 | 889 | 872 | 622 | 28 | 37 | 37 | 34 | 18 |
| 1050 | 887 | 932 | 934 | 904 | 640 | 878 | 915 | 916 | 892 | 629 | 9 | 17 | 18 | 12 | 11 |
| 1200 | 905 | 948 | 949 | 903 | 639 | 916 | 952 | 951 | 912 | 635 | -11 | -4 | -2 | -9 | 4 |
| 1350 | | 963 | 961 | 903 | 637 | | 958 | 954 | 931 | 639 | | 5 | 7 | -28 | -2 |
| 1500 | | | | 902 | 634 | | | | 951 | 636 | | | | -49 | -2 |

NOTE: Pre-test measurements are taken when the vehicle is in the “As Tested” weight condition. Vehicle measurements forward of the vertical impact reference line are negative. The crush profile grid is established prior to the test based on an estimated impact point. The final distance from impact is determined after the final dummy positioning and the pole is aligned with the center of gravity of the dummy’s head.

DATA SHEET NO. 10 ... (CONTINUED)
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2021 Cadillac XT6 SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210103
 Test Date: 1/12/2021



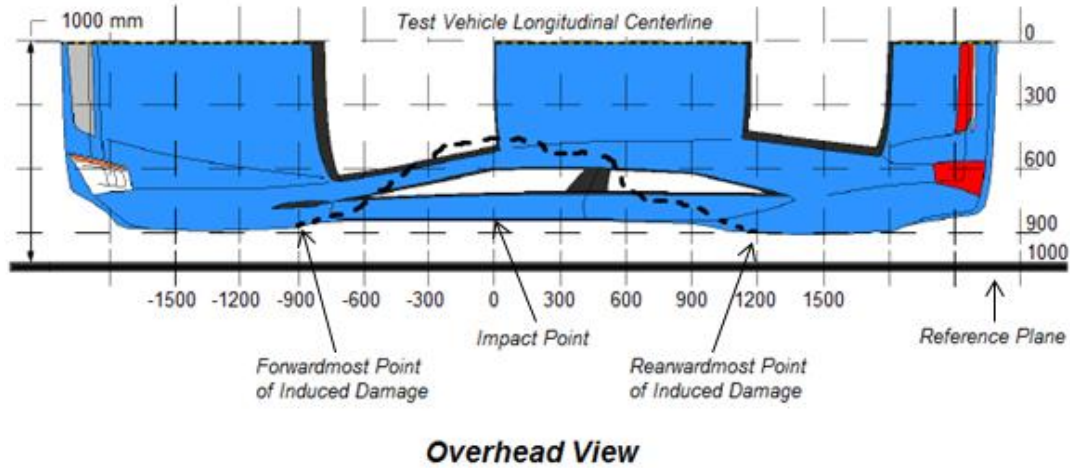
Vehicle Exterior Crush Measurements - Visual Representation

**DATA SHEET NO. 11
VEHICLE DAMAGE PROFILE DISTANCES**

Test Vehicle: 2021 Cadillac XT6 SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210103
 Test Date: 1/12/2021

For guidance regarding damage profile distance measurements, please refer to the latest version of the *NHTSA Test Reference Guide, Volume 1: Vehicle Tests*.



VEHICLE DAMAGE PROFILE DISTANCES

| DPD | Distance From Impact Point (mm) | Level | Post-Test (mm) | Pre-Test (mm) | Crush (mm) |
|-----|---------------------------------|-------|----------------|---------------|------------|
| 1 | -900 | 3 | 7 | 15 | -8 |
| 2 | -450 | 3 | 142 | 52 | 90 |
| 3 | 0 | 3 | 430 | 68 | 362 |
| 4 | 450 | 3 | 173 | 72 | 101 |
| 5 | 900 | 3 | 111 | 74 | 37 |
| 6 | 1350 | 3 | 46 | 39 | 7 |

**DATA SHEET NO. 12
FMVSS NO. 301 STATIC ROLLOVER RESULTS**

| | | | |
|---------------|-----------------------------------|--------------|------------------|
| Test Vehicle: | <u>2021 Cadillac XT6 SUV</u> | NHTSA No.: | <u>M20210103</u> |
| Test Program: | <u>NCAP Side Pole Impact Test</u> | Test Date: | <u>1/12/2021</u> |
| Test Time: | <u>12:15 PM</u> | Temperature: | <u>21° C</u> |

- A. From impact until vehicle motion ceases: 0 oz.
(Maximum allowable is 1 oz.)
- B. For the 5-minute period after motion ceases: 0 oz.
(Maximum allowable is 5 oz.)
- C. For the following 25 minutes: 0 oz.
(Maximum allowable is 1 oz./minute)
- D. Spillage Details: No Spillage Occurred

FMVSS NO. 301 STATIC ROLLOVER DATA



ROLLOVER SOLVENT COLLECTION TIME TABLE IN SECONDS

| Test Phase | Rotation Time | Hold Time | Total Time |
|--------------|---------------|-----------|------------|
| 0° to 90° | 75 | 300 | 375 |
| 90° to 180° | 65 | 300 | 365 |
| 180° to 270° | 65 | 300 | 365 |
| 270° to 360° | 70 | 300 | 370 |

FMVSS NO. 301 ROLLOVER SPILLAGE TABLE

| Test Phase | First 5 Minutes | Sixth Minute | Seventh Minute | Eighth Minute |
|--------------|-----------------|--------------|----------------|---------------|
| 0° to 90° | 0 | 0 | 0 | - |
| 90° to 180° | 0 | 0 | 0 | - |
| 180° to 270° | 0 | 0 | 0 | - |
| 270° to 360° | 0 | 0 | 0 | - |

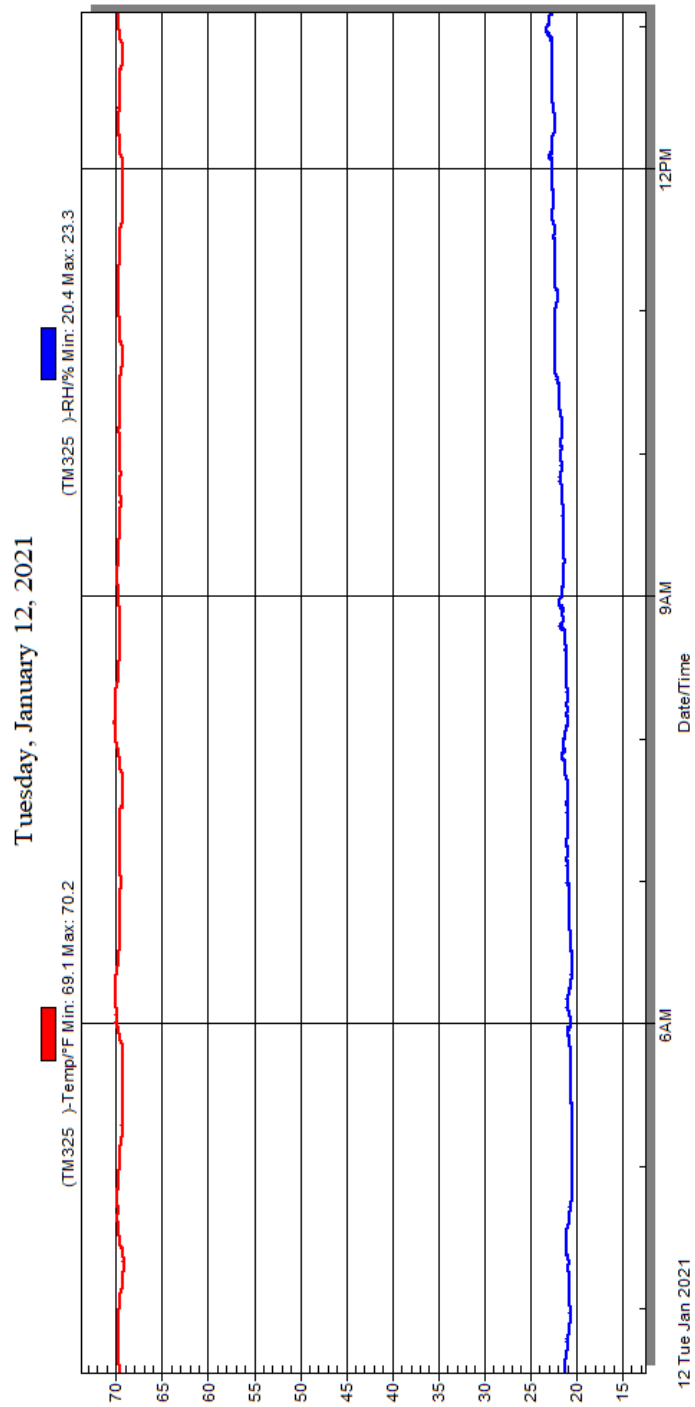
ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

| Test Phase | Spillage Location |
|--------------|-------------------|
| 0° to 90° | None |
| 90° to 180° | None |
| 180° to 270° | None |
| 270° to 360° | None |

DATA SHEET NO. 13
DUMMY / VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION DATA

Test Vehicle: 2021 Cadillac XT6 SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210103
Test Date: 1/12/2021



Temperature and Humidity Stabilization Chart / Data for Dummies and Test Vehicle

APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

| Fig. | Description | Page |
|------|--|------|
| 1 | As Delivered Right Front $\frac{3}{4}$ View of Test Vehicle | A-4 |
| 2 | As Delivered Left Rear $\frac{3}{4}$ View of Test Vehicle | A-4 |
| 3 | Pre-Test Frontal View of Test Vehicle | A-5 |
| 4 | Post-Test Frontal View of Test Vehicle | A-5 |
| 5 | Pre-Test Left Front $\frac{3}{4}$ View of Test Vehicle | A-6 |
| 6 | Post-Test Left Front $\frac{3}{4}$ View of Test Vehicle | A-6 |
| 7 | Pre-Test Left Side View of Test Vehicle | A-7 |
| 8 | Post-Test Left Side View of Test Vehicle | A-7 |
| 9 | Pre-Test Left Rear $\frac{3}{4}$ View of Test Vehicle | A-8 |
| 10 | Post-Test Left Rear $\frac{3}{4}$ View of Test Vehicle | A-8 |
| 11 | Pre-Test Rear View of Test Vehicle | A-9 |
| 12 | Post-Test Rear View of Test Vehicle | A-9 |
| 13 | Pre-Test Right Side View of Test Vehicle | A-10 |
| 14 | Post-Test Right Side View of Test Vehicle | A-10 |
| 15 | Pre-Test Overhead View of Test Area | A-11 |
| 16 | Post-Test Overhead View of Test Area | A-11 |
| 17 | Pre-Test Left Side View of Pole Positioned Against Side of Vehicle | A-12 |
| 18 | Pre-Test Right Side View of Pole Positioned Against Side of Vehicle | A-12 |
| 19 | Pre-Test Close-Up View of Impact Point Target | A-13 |
| 20 | Post-Test Close-Up View of Impact Point Target Showing Impact Location | A-13 |
| 21 | Pre-Test Front Close-Up View of Dummy Head and Chest | A-14 |
| 22 | Post-Test Front Close-Up View of Dummy | A-14 |
| 23 | Pre-Test Left Side View of Dummy Showing Belt and Chalking | A-15 |
| 24 | Pre-Test Left Side View of Dummy Shoulder and Door Top View | A-15 |
| 25 | Post-Test Left Side View of Dummy Shoulder and Door Top View | A-16 |
| 26 | Pre-Test Frontal View of Seat Back Prior to Dummy Positioning | A-16 |
| 27 | Pre-Test Frontal Close-Up View of Dummy Head / Shoulders in Relation to Head Restraint | A-17 |
| 28 | Pre-Test Frontal View of Seat Pan Prior to Dummy Positioning | A-17 |
| 29 | Pre-Test Overhead View of Dummy Thighs on Seat Pan | A-18 |
| 30 | Pre-Test Left Side View of Dummy's Neck Showing Position of Adjustable Neck Bracket | A-18 |
| 31 | Pre-Test Left Side View of Dummy's Head Showing Dummy's Head is Level | A-19 |
| 32 | Pre-Test Placement of Dummy's Feet | A-19 |
| 33 | Pre-Test View of Belt Anchorage for Dummy | A-20 |
| 34 | Pre-Test Left Side View of Steering Wheel | A-20 |
| 35 | Pre-Test View of Disengaged Parking Brake | A-21 |

| Fig. | Description | Page |
|-------------|---|-------------|
| 36 | Pre-Test View of Parking Brake | A-21 |
| 37 | Pre-Test Close-Up Left Side View of Driver Seat Track | A-22 |
| 38 | Pre-Test Close-Up Left Side View of Driver Seat Back | A-22 |
| 39 | Pre-Test Close-Up View of Driver Seat Back or Head Restraint | A-23 |
| 40 | Pre-Test Dummy and Door Clearance View | A-23 |
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M20210103

Figure A-1: As Delivered Right Front ¾ View of Test Vehicle



M20210103

Figure A-2: As Delivered Left Rear ¾ View of Test Vehicle



Figure A-3: Pre-Test Frontal View of Test Vehicle



Figure A-4: Post-Test Frontal View of Test Vehicle



Figure A-5: Pre-Test Left Front $\frac{3}{4}$ View of Test Vehicle



Figure A-6: Post-Test Left Front $\frac{3}{4}$ View of Test Vehicle



Figure A-7: Pre-Test Left Side View of Test Vehicle



Figure A-8: Post-Test Left Side View of Test Vehicle



Figure A-9: Pre-Test Left Rear ¾ View of Test Vehicle



Figure A-10: Post-Test Left Rear ¾ View of Test Vehicle

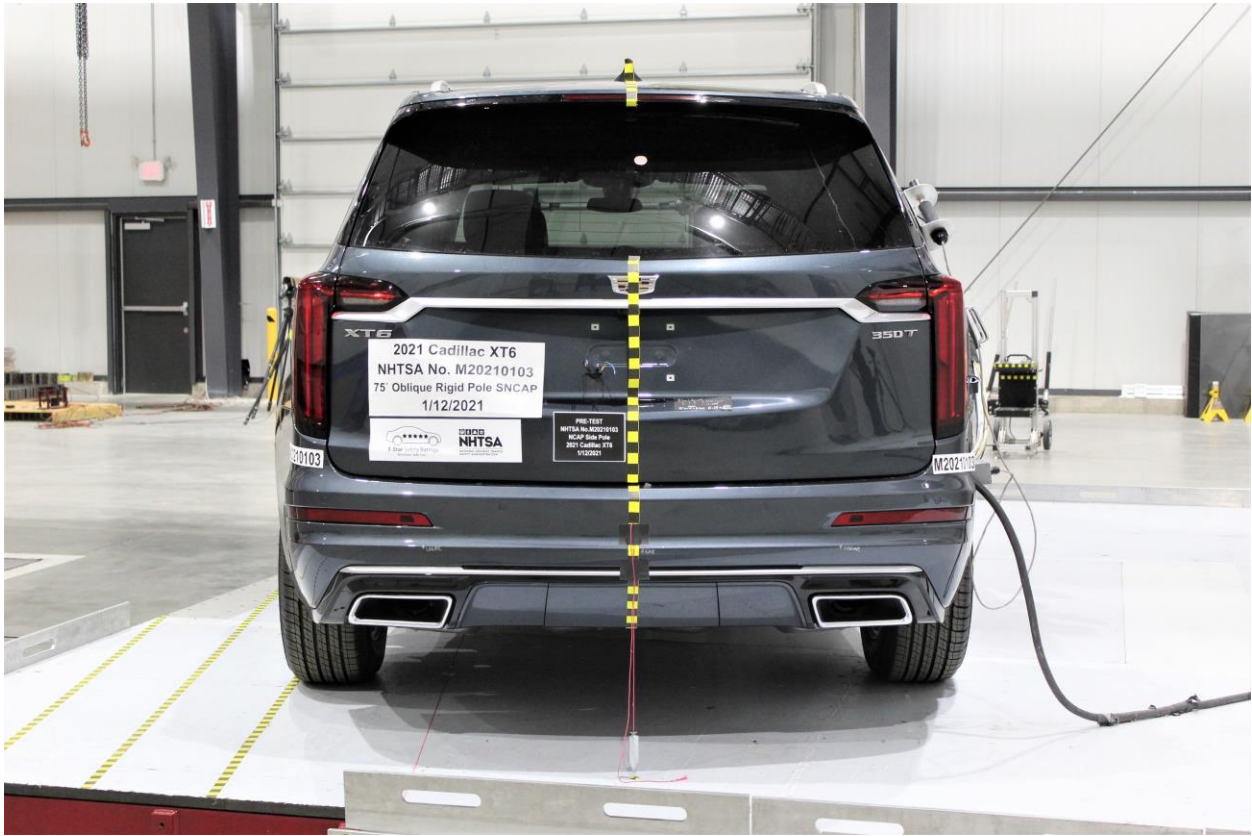


Figure A-11: Pre-Test Rear View of Test Vehicle



Figure A-12: Post-Test Rear View of Test Vehicle



Figure A-13: Pre-Test Right Side View of Test Vehicle



Figure A-14: Post-Test Right Side View of Test Vehicle

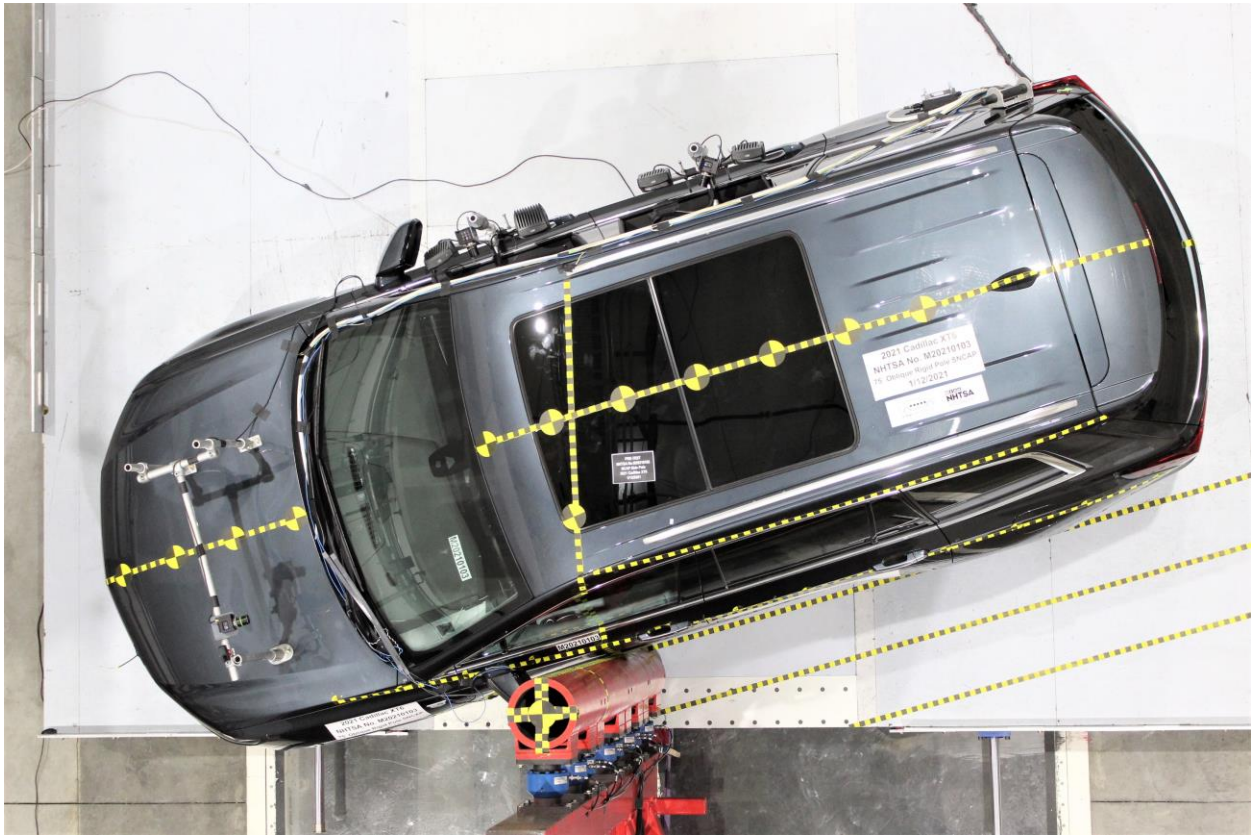


Figure A-15: Pre-Test Overhead View of Test Area



Figure A-16: Post-Test Overhead View of Test Area



Figure A-17: Pre-Test Left Side View of Pole Positioned Against Side of Vehicle



Figure A-18: Pre-Test Right Side View of Pole Positioned Against Side of Vehicle

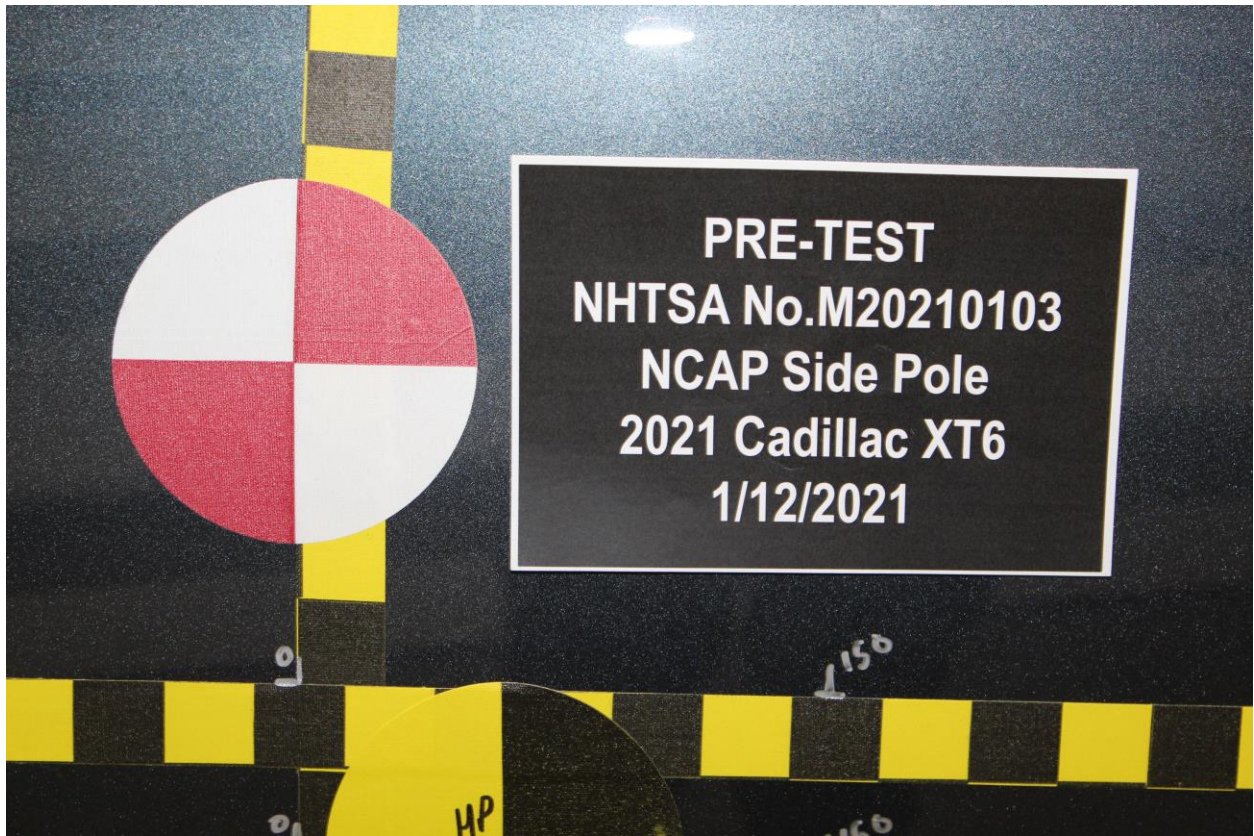


Figure A-19: Pre-Test Close-Up View of Impact Point Target



Figure A-20: Post-Test Close-Up View of Impact Point Target Showing Impact Location



Figure A-21: Pre-Test Front Close-Up View of Dummy Head and Chest

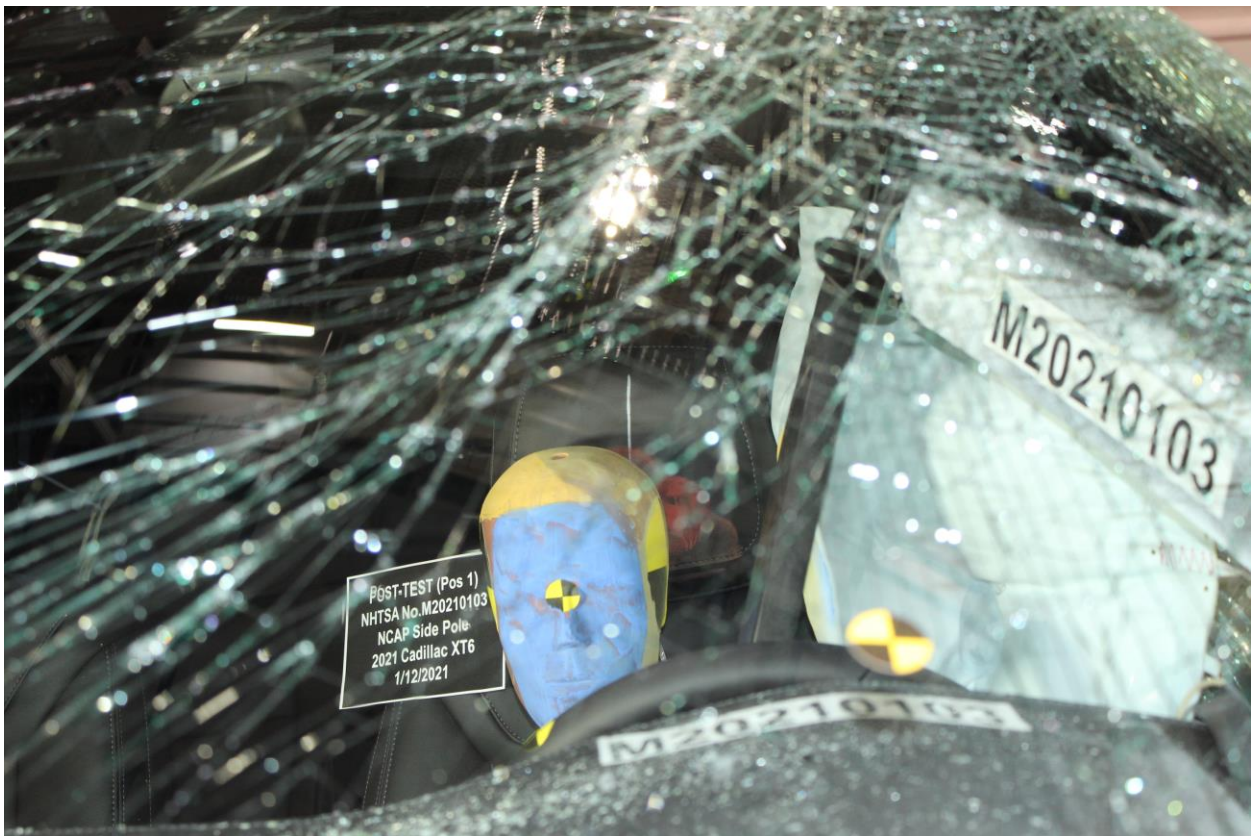


Figure A-22: Post-Test Front Close-Up View of Dummy



Figure A-23: Pre-Test Left Side View of Dummy Showing Belt and Chalking



Figure A-24: Pre-Test Left Side View of Dummy Shoulder and Door Top View



Figure A-25: Post-Test Left Side View of Dummy Shoulder and Door Top View



Figure A-26: Pre-Test Frontal View of Seat Back Prior to Dummy Positioning



Figure A-27: Pre-Test Frontal Close-Up View of Dummy Head / Shoulders in Relation to Head Restraint



Figure A-28: Pre-Test Frontal View of Seat Pan Prior to Dummy Positioning



Figure A-29: Pre-Test Overhead View of Dummy Thighs on Seat Pan



Figure A-30: Pre-Test Left Side View of Dummy's Neck Showing Position of Adjustable Neck Bracket



PRE-TEST (Pos 1)
NHTSA No.M20210103
NCAP Side Pole
2021 Cadillac XT6
1/12/2021

Figure A-31: Pre-Test Left Side View of Dummy's Head Showing Dummy's Head is Level



PRE-TEST (Pos 1)
NHTSA No.M20210103
NCAP Side Pole
2021 Cadillac XT6
1/12/2021

Figure A-32: Pre-Test Placement of Dummy's Feet



Figure A-33: Pre-Test View of Belt Anchorage for Dummy



Figure A-34: Pre-Test Left Side View of Steering Wheel



Figure A-35: Pre-Test View of Disengaged Parking Brake



Figure A-36: Pre-Test View of Parking Brake

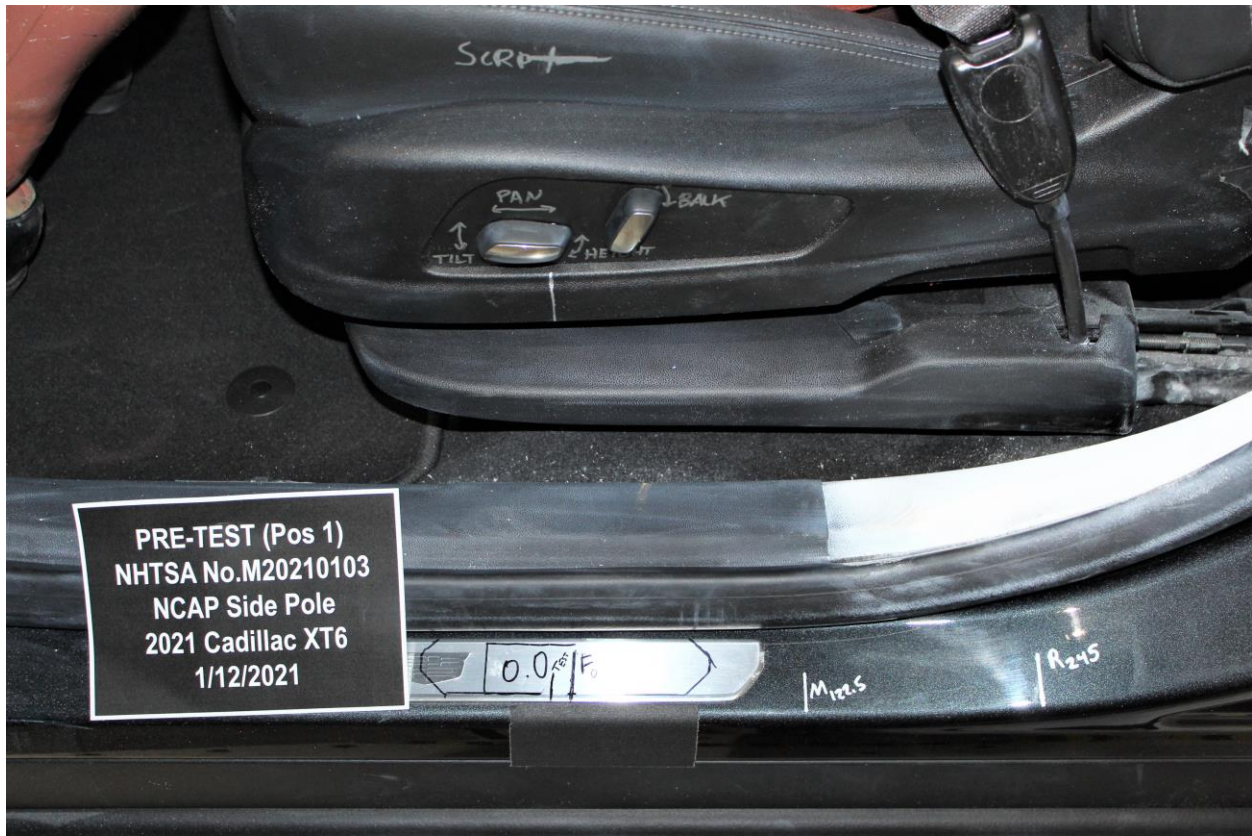


Figure A-37: Pre-Test Close-Up Left Side View of Driver Seat Track

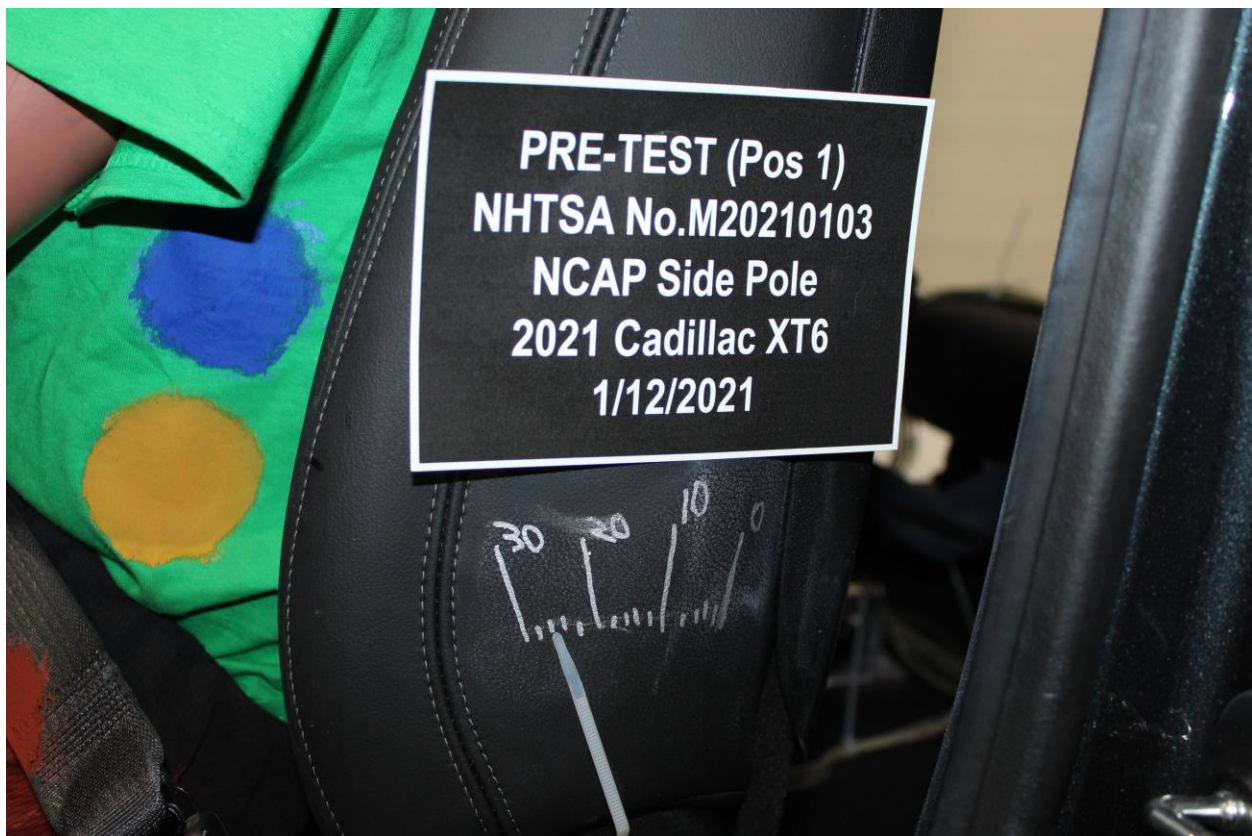


Figure A-38: Pre-Test Close-Up Left Side View of Driver Seat Back



Figure A-39: Pre-Test Close-Up View of Driver Seat Back or Head Restraint



Figure A-40: Pre-Test Dummy and Door Clearance View



Figure A-41: Post-Test Dummy and Door Clearance View



Figure A-42: Pre-Test Right Side View of Dummy and Front Seat of Occupant Compartment



Figure A-43: Post-Test Right Side View of Dummy and Front Seat of Occupant Compartment



Figure A-44: Pre-Test Inner Door Panel View



Figure A-45: Post-Test Inner Door Panel View Showing Dummy Contact Location



Figure A-46: Post-Test Dummy Close-Up Head Contact with Vehicle Interior View



Figure A-47: Post-Test Dummy Close-Up Head Contact with Side Airbag View



Figure A-48: Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View



Figure A-49: Post-Test Dummy Close-Up Torso Contact with Side Airbag View



Figure A-50: Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View



Figure A-51: Post-Test Dummy Close-Up Pelvis Contact with Side Airbag View



Figure A-52: Post-Test Dummy Close-Up Knee Contact with Vehicle Interior View



Figure A-53: Pre-Test View of Fuel Filler Cap or Fuel Filler Neck



Figure A-54: Post-Test View of Fuel Filler Cap or Fuel Filler Neck



Figure A-55: Close-Up View of Vehicle's Certification Label



Figure A-56: Close-Up View of Vehicle's Tire Information Placard or Label

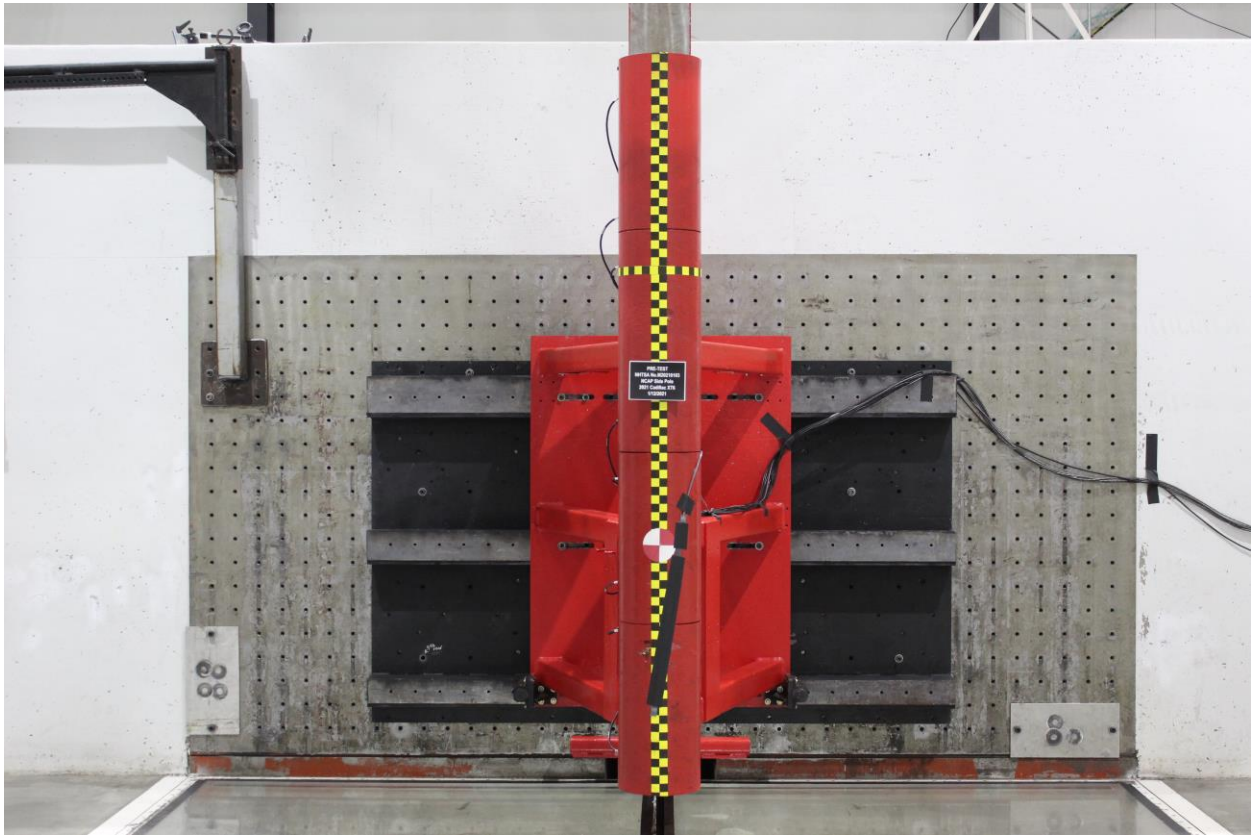


Figure A-57: Pre-Test Pole Barrier Front View

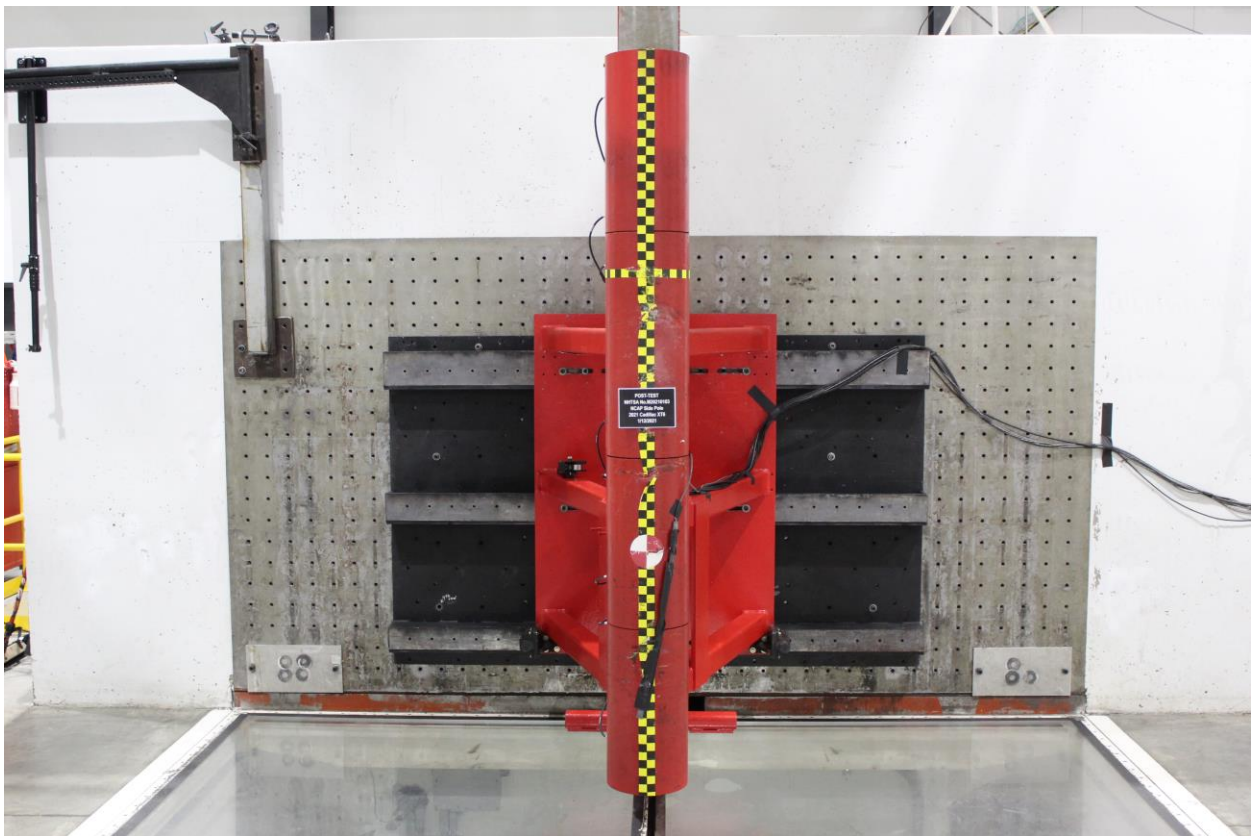


Figure A-58: Post-Test Pole Barrier Front View

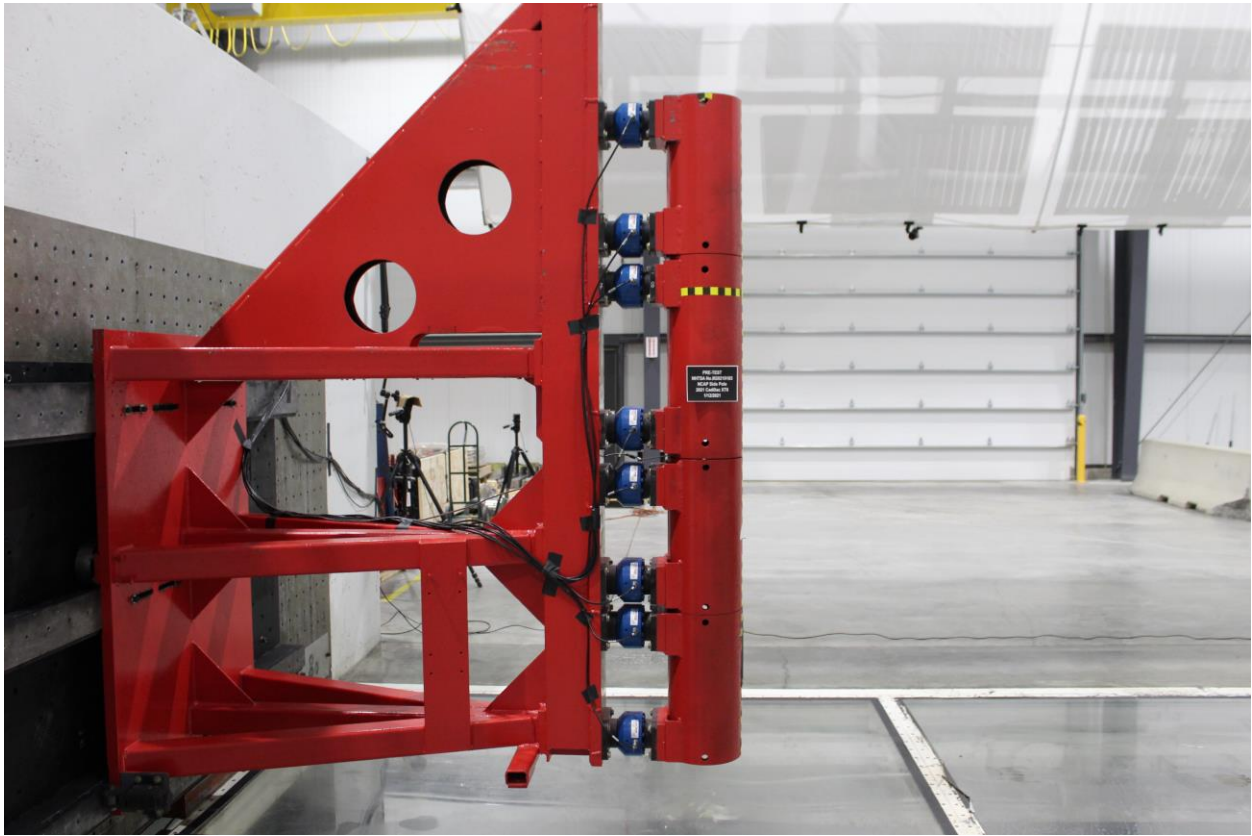


Figure A-59: Pre-Test Pole Barrier Side View

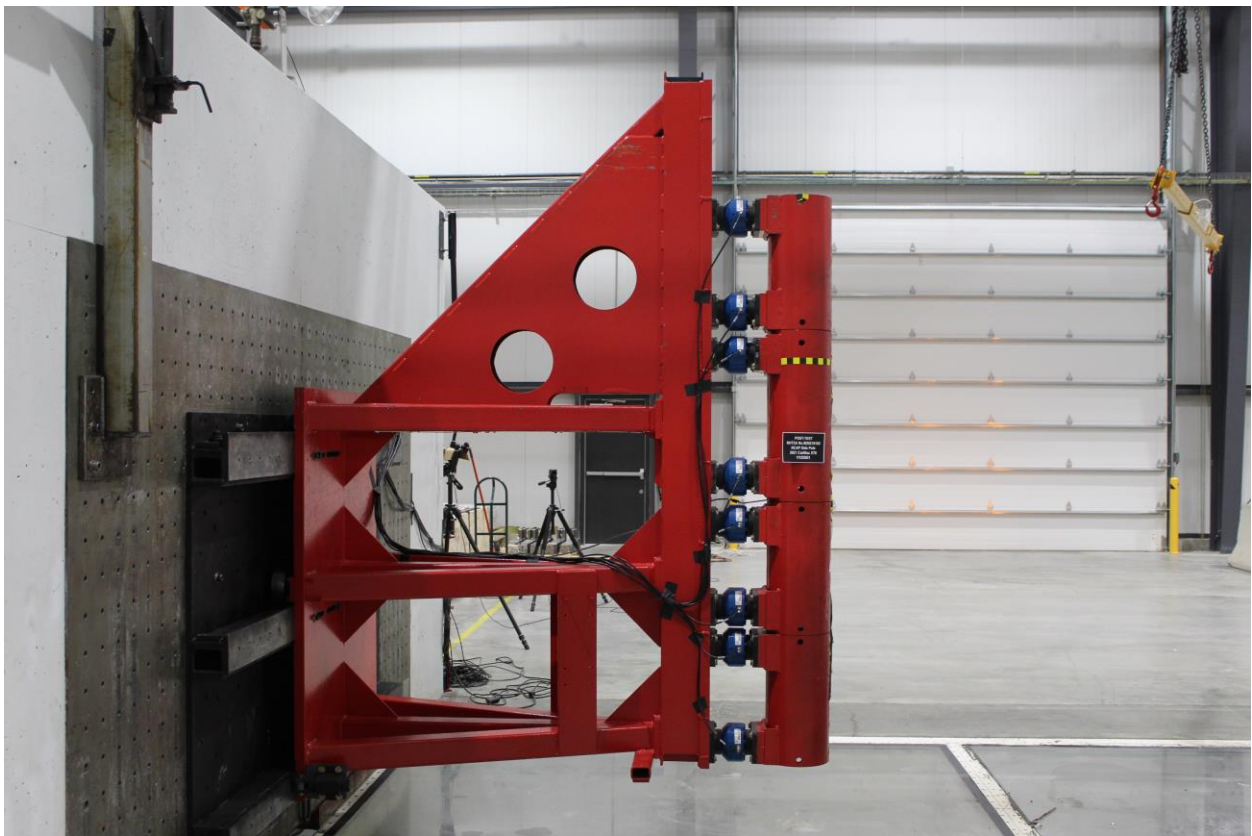


Figure A-60: Post-Test Pole Barrier Side View

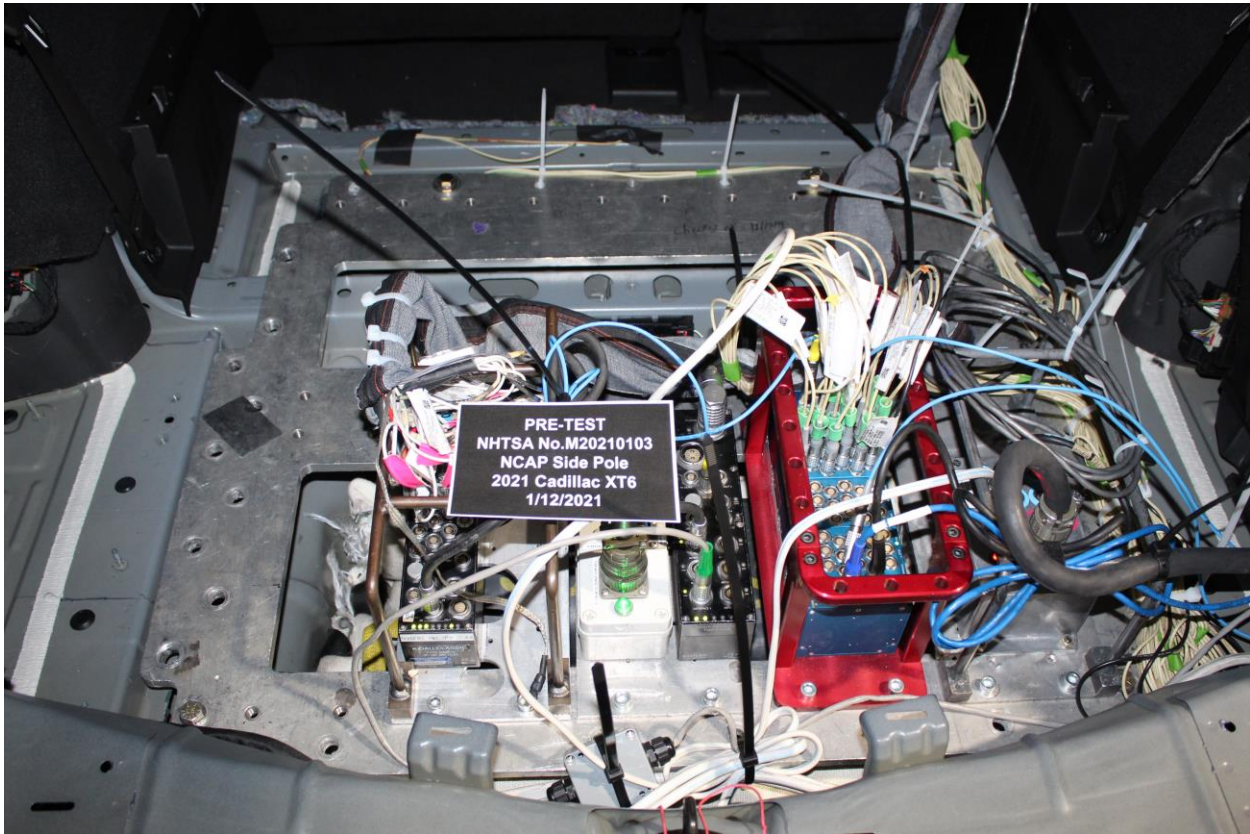


Figure A-61: Pre-Test Ballast View



Figure A-62: Post-Test Primary and Redundant Speed Trap Read-Out



Figure A-63: FMVSS No. 301 Static Rollover 0 Degrees

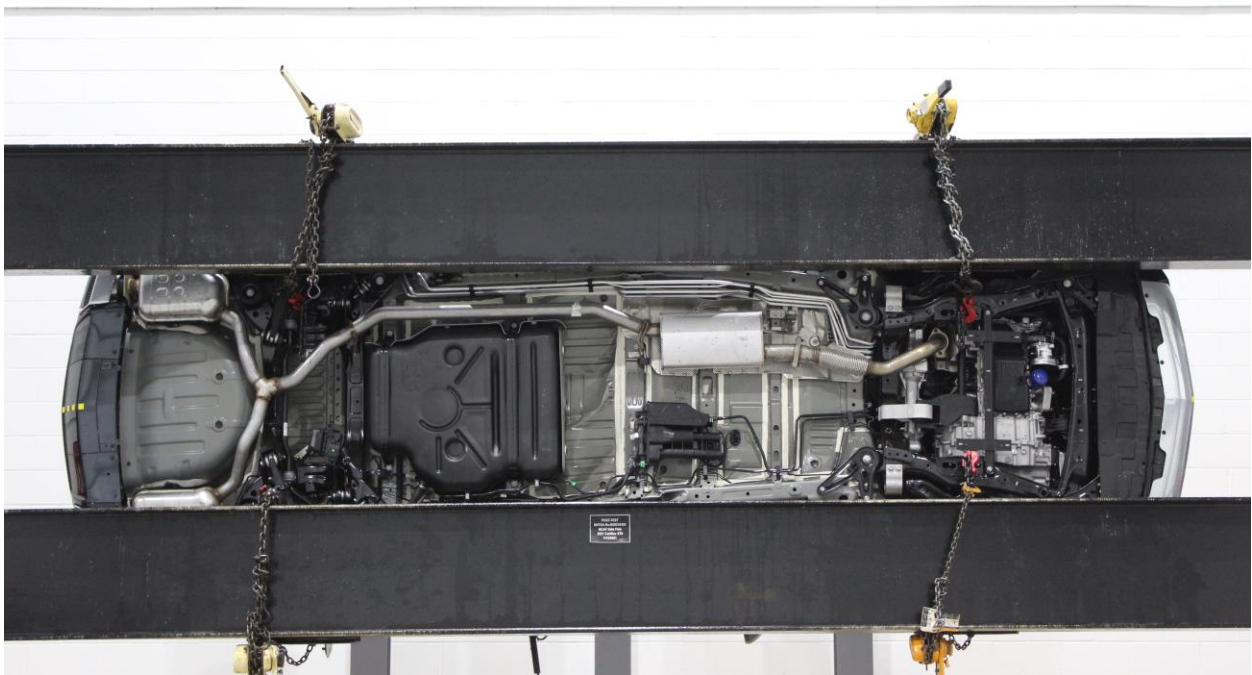


Figure A-64: FMVSS No. 301 Static Rollover 90 Degrees



Figure A-65: FMVSS No. 301 Static Rollover 180 Degrees



Figure A-66: FMVSS No. 301 Static Rollover 270 Degrees



Figure A-67: FMVSS No. 301 Static Rollover 360 Degrees



Figure A-68: Impact Event



2021 XT6 LUXURY FWD

EXTERIOR: SHADOW METALLIC
INTERIOR: JET BLACK

ENGINE: 2.0L 4-CYLINDER TURBO
TRANSMISSION: 9-SPEED AUTOMATIC

Visit us at www.cadillac.com

| | | | |
|---|--|--|--|
| <p>STANDARD EQUIPMENT ITEMS LISTED BELOW ARE INCLUDED AT NO EXTRA CHARGE IN THE STANDARD VEHICLE PRICE SHOWN.</p> <ul style="list-style-type: none"> OWNER BENEFITS <ul style="list-style-type: none"> 4 YEAR / 50,000 MILE* BUMPER-TO-BUMPER LIMITED WARRANTY 6 YEAR/70,000 MILE* POWERTRAIN LIMITED WARRANTY, ROADSIDE ASSISTANCE & COURTESY TRANSPORTATION FIRST MAINTENANCE VISIT *WHICHEVER COMES FIRST SEE CADILLAC.COM OR DEALER FOR TERMS, DETAILS & LIMITS PERFORMANCE <ul style="list-style-type: none"> FRONT-WHEEL DRIVE W/ DRIVER MODE SELECTOR TIRE, COMPACT SPARE WHEELS, 18" ALLOY LUXURY & CONVENIENCE <ul style="list-style-type: none"> CADILLAC USER EXPERIENCE, | <p>AM/FM STEREO W/ 8" DIAGONAL COLOR INFORMATION DISPLAY, WIRELESS APPLE CARPLAY & WIRELESS ANDROID AUTO CAPABILITY FOR COMPATIBLE PHONES, NATURAL VOICE RECOGNITION</p> <ul style="list-style-type: none"> ONSTAR (R) SERVICES & 4G LTE W-FI (R) AVAILABLE; SEE ONSTAR.COM FOR TERMS SIRIUSXM RADIO CAPABLE, ALL ACCESS TRIAL W/ SUBSCRIPTION SOLD SEPARATELY ADAPTIVE REMOTE START BOSE PREMIUM AUDIO, 8 SPEAKER CLIMATE CONTROL, TRI-ZONE DRIVER MEMORY SEAT HEATED SEATS, FRONT INSIDE MIRROR, AUTO DIMMING LAMPS, FRONT CORNERING LED HEADLAMPS & TAILLAMPS LIFTGATE, POWER MIRRORS, OUTSIDE, HEATED, | <p>MANUAL FOLDING, TURN SIGNAL</p> <ul style="list-style-type: none"> PASSIVE ENTRY & KEYLESS START POWER SEAT ADJUSTER, DRIVER 8-WAY & PASSENGER 6-WAY SEATING, 7-PASSENGER ULTRAVIEW(R) SUNROOF W/ POWER SUNSHADE <p>SAFETY & SECURITY</p> <ul style="list-style-type: none"> AUTOMATIC EMERGENCY BRAKING FOLLOWING DISTANCE INDICATOR FORWARD COLLISION ALERT FRONT PEDESTRIAN BRAKING FRONT & REAR PARK ASSIST INTELLIBEAM-AUTO HIGH BEAM HD REAR VISION CAMERA LANE KEEP ASSIST WITH LANE DEPARTURE WARNING SAFETY ALERT SEAT <p>MANUFACTURER'S SUGGESTED RETAIL PRICE</p> <p>STANDARD VEHICLE PRICE \$47,995.00</p> | <p>OPTIONS & PRICING</p> <p>OPTIONS INSTALLED BY THE MANUFACTURER MAY REPLACE STANDARD EQUIPMENT (SPEARS)</p> <p>SHADOW METALLIC 625.00 ALL-WEATHER FLOOR MATS, FRONT & REAR (DEALER INSTALLED) 265.00</p> <p>TOTAL OPTIONS \$890.00 TOTAL VEHICLE & OPTIONS \$48,885.00 DESTINATION CHARGE 995.00</p> <p>TOTAL VEHICLE PRICE* \$49,880.00</p> |
|---|--|--|--|

| | | | |
|--|--|--|---|
| <p>EPA DOT Fuel Economy and Environment</p> <p>Fuel Economy</p> <p>23 MPG combined city/hwy</p> <p>21 city 27 highway</p> <p>4.3 gallons per 100 miles</p> <p>Small SUVs range from 16 to 120 MPG. The best vehicle rates 141 MPG.</p> <p>You spend \$3,000 more in fuel costs over 5 years compared to the average new vehicle.</p> | <p>Gasoline Vehicle</p> <p>Annual fuel cost \$2,100</p> <p>Fuel Economy & Greenhouse Gas Rating (tailpipe only)</p> <p>Smog Rating (tailpipe only)</p> <p>This vehicle emits 388 grams CO₂ per mile. The best emits 8 grams per mile (tailpipe only). Producing and distributing fuel also create emissions; learn more at fuelconomy.gov.</p> <p>Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 23 MPG and costs \$2,500 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$2.25 per gallon. MPG is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.</p> <p>fuelconomy.gov Calculate personalized estimates and compare vehicles</p> | <p>GOVERNMENT 5-STAR SAFETY RATINGS</p> <p>Overall Vehicle Score Not Rated Based on the combined ratings of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight.</p> <p>Frontal Crash Driver: ★★★★★ Passenger: ★★★★★</p> <p>Side Crash Front seat: Not Rated Rear seat: Not Rated</p> <p>Rollover Based on the risk of rollover in a single-vehicle crash. ★★★★★</p> <p>Star ratings range from 1 to 5 stars (★★★★★) with 5 being the highest. Source: National Highway Traffic Safety Administration (NHTSA) www.safercar.gov or 1-888-327-4236</p> | <p>PARTS CONTENT INFORMATION</p> <p>FOR VEHICLES IN THIS CARLINE: U.S./CANADIAN PARTS CONTENT: 49% MAJOR SOURCES OF FOREIGN PARTS CONTENT: MEXICO 25%</p> <p>NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL ASSEMBLY, DISTRIBUTION, OR OTHER NON-PARTS COSTS.</p> <p>FOR THIS VEHICLE: FINAL ASSEMBLY POINT: SPRING HILL, TN U.S.A. COUNTRY OF ORIGIN: U.S.A. ENGINE: UNITED STATES TRANSMISSION: UNITED STATES</p> <p>© 2020 General Motors LLC GMSL 59022 0008 - 09/2020</p> |
|--|--|--|---|

Figure A-69: Monroney Label

40 SEATS AND RESTRAINTS

Head Restraints

Front Seats

Warning

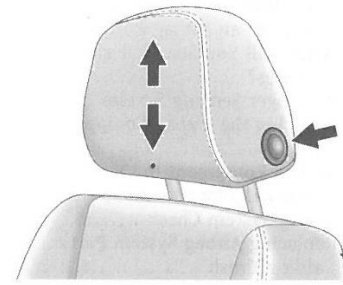
With head restraints that are not installed and adjusted properly, there is a greater chance that occupants will suffer a neck/spinal injury in a crash. Do not drive until the head restraints for all occupants are installed and adjusted properly.

The vehicle's front seats have adjustable head restraints in the outboard seating positions.



Adjust the head restraint so that the top of the restraint is at the same height as the top of the occupant's head. This position reduces the chance of a neck injury in a crash.

The height of the head restraint can be adjusted.



To raise or lower the head restraint, press the button located on the side of the head restraint, and pull up or push the head restraint down, and release the button. Pull and push on the head restraint after the button is released to make sure that it is locked in place.

The front seat outboard head restraints are not removable.

Rear Seats

Second Row Seats

The vehicle's second row seats have adjustable head restraints in the outboard seating positions.

The height of the head restraint can be adjusted. Pull the head restraint up to raise it. Try to move the head restraint to make sure that it is locked in place.



To lower the head restraint, press the button, located on the top of the seatback, and push the head restraint

Figure A-70: Head Restraint Use and Adjustment Information from Vehicle Owner's Manual



Figure A-71: Post-Test View of Shattered Vehicle Inner Door Panel

APPENDIX B

VEHICLE AND DUMMY RESPONSE DATA PLOTS

TABLE OF DATA PLOTS
Driver Dummy Instrumentation Plots

| Fig. | Description | Page |
|-------------|--|-------------|
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| 2 | Driver Head Acceleration (Y) Primary vs. Time | B-4 |
| 3 | Driver Head Acceleration (Z) Primary vs. Time | B-4 |
| 4 | Driver Head Resultant Acceleration Primary vs. Time | B-4 |
| 5 | Driver Lower Spine T12 Acceleration (X) vs. Time | B-5 |
| 6 | Driver Lower Spine T12 Acceleration (Y) vs. Time | B-5 |
| 7 | Driver Lower Spine T12 Acceleration (Z) vs. Time | B-5 |
| 8 | Driver Lower Spine T12 Resultant Acceleration vs. Time | B-5 |
| 9 | Driver Iliac Wing Force on Impact Side (Y) vs. Time | B-6 |
| 10 | Driver Acetabulum Force on Impact Side (Y) vs. Time | B-6 |
| 11 | Driver Total Pelvis Force on Impact Side (Y) vs. Time | B-6 |

The following additional data for this test can be obtained from the Research and Development section of the NHTSA website. The website can be found at www.NHTSA.gov.

Additional Driver Dummy Instrumentation Data

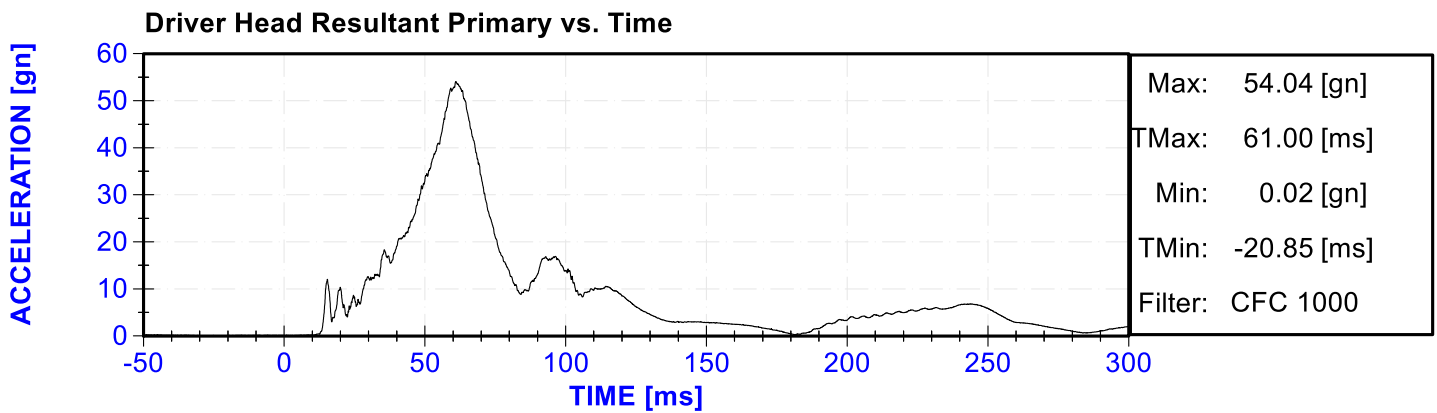
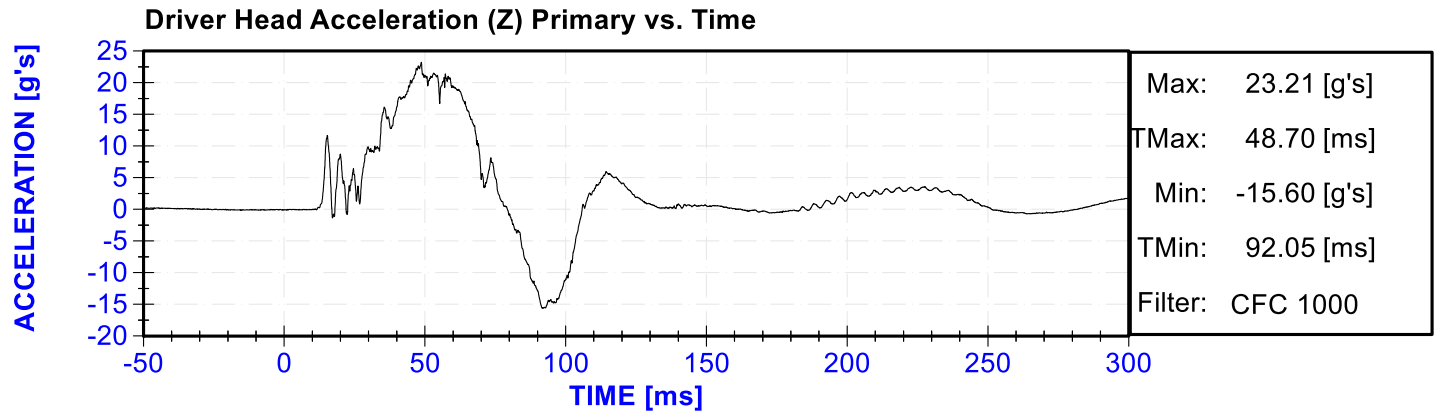
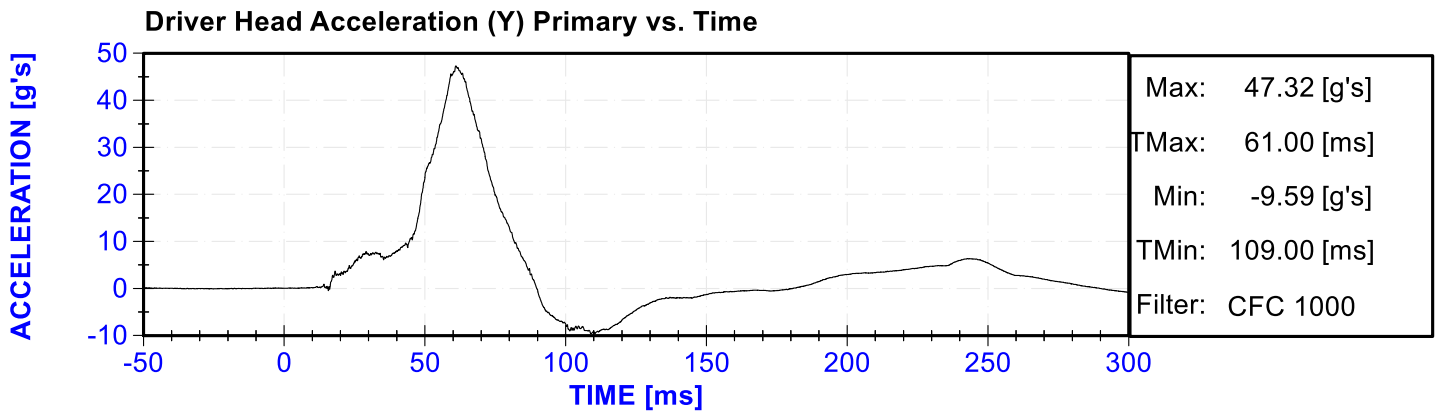
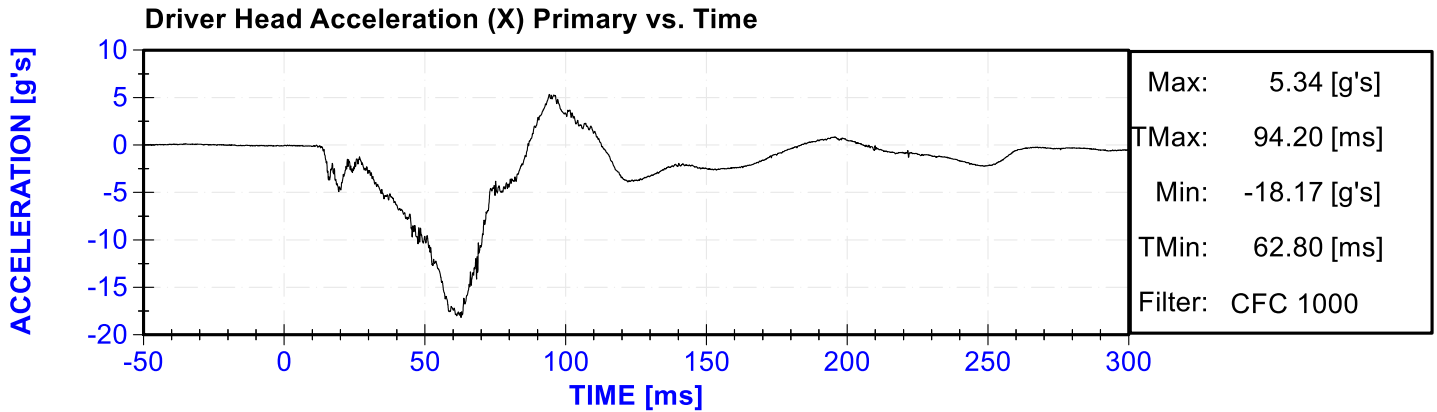
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Driver Head Acceleration Redundant (Y)
Driver Head Acceleration Redundant (Z)
Driver Upper Thorax Rib Deflection (Y)
Driver Middle Thorax Rib Deflection (Y)
Driver Lower Thorax Rib Deflection (Y)
Driver Upper Abdomen Rib Deflection (Y)
Driver Lower Abdomen Rib Deflection (Y)

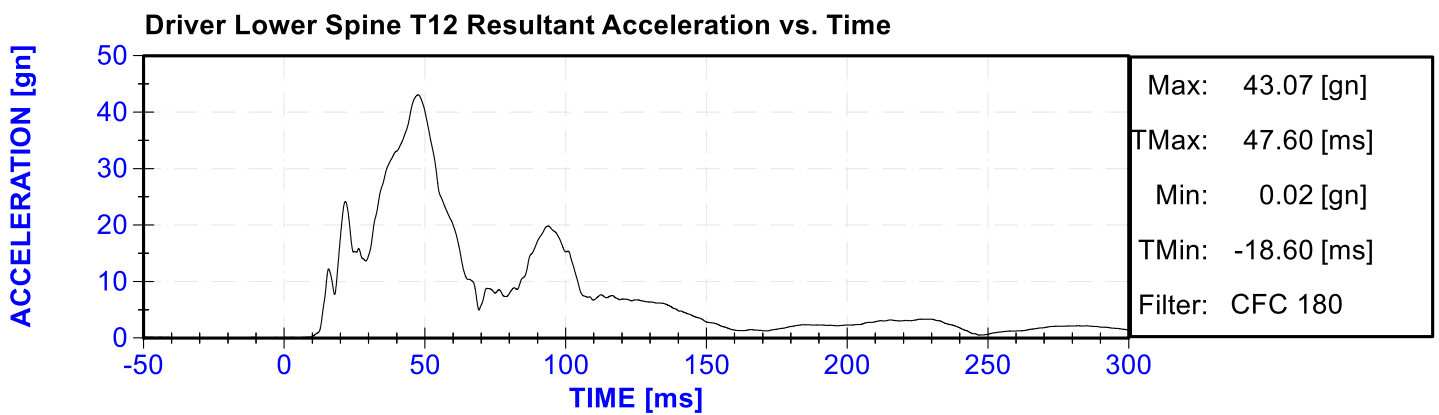
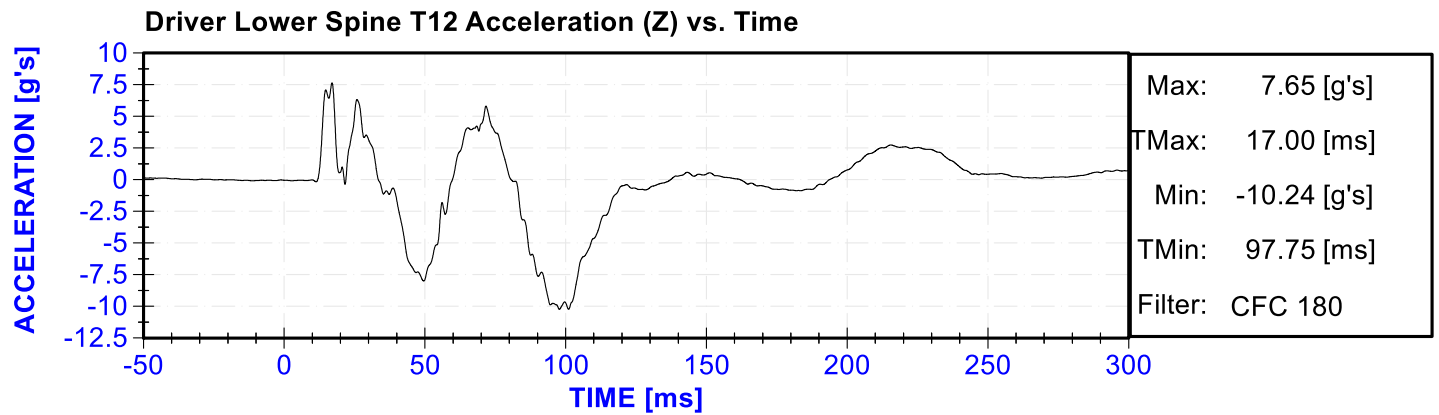
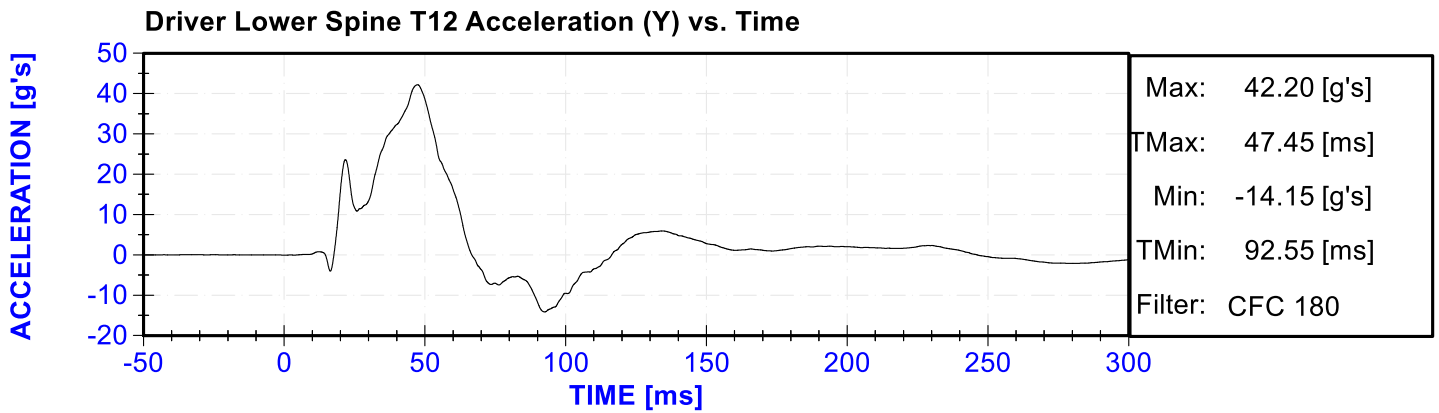
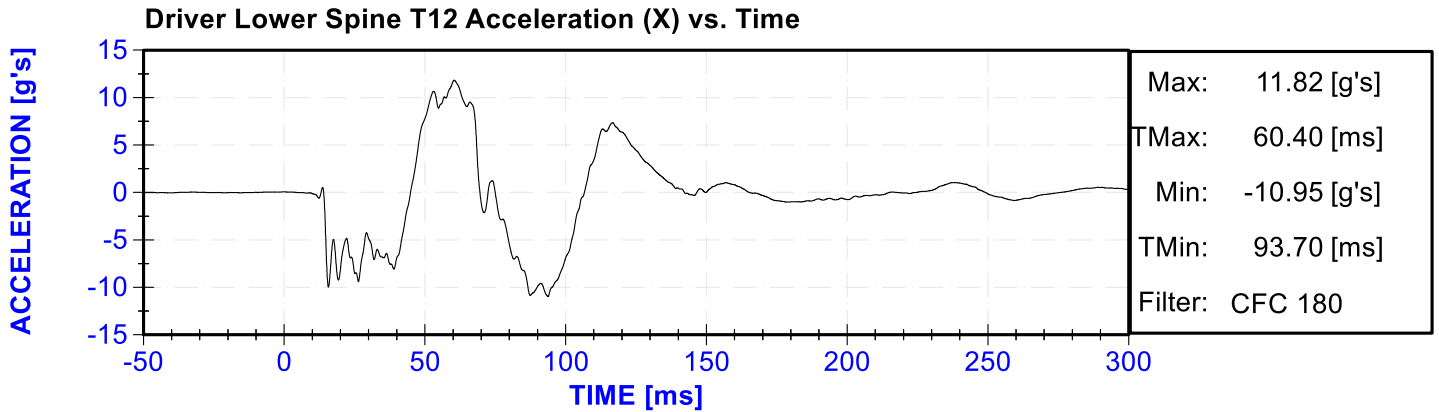
Vehicle Instrumentation Data

Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)
Left Floor Sill Acceleration (Y)
Left A-Pillar Sill Acceleration (Y)
Left Lower A-Pillar Acceleration (Y)
Left Mid A-Pillar Acceleration (Y)
Left B-Pillar Sill Acceleration (Y)
Left Lower B-Pillar Acceleration (Y)
Left Mid B-Pillar Acceleration (Y)
Driver Seat Track at Dummy Hip Point Acceleration (Y)
Engine Top Acceleration (X)
Engine Top Acceleration (Y)
Firewall Center Acceleration (Y)
Right Roof at Vertical Impact Reference Line Acceleration (Y)
Right Sill at Vertical Impact Reference Line Acceleration (Y)
Rear Floorpan Behind Rear Axle at Centerline Acceleration (X)
Rear Floorpan Behind Rear Axle at Centerline Acceleration (Y)

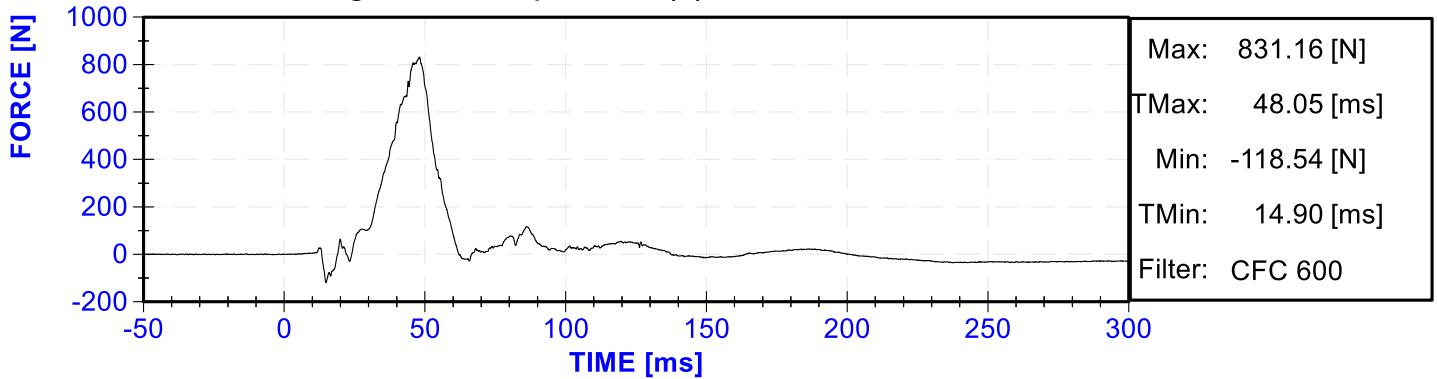
Pole Instrumentation Data

Load Cell Pole Barrier #1 Force (Y)
Load Cell Pole Barrier #2 Force (Y)
Load Cell Pole Barrier #3 Force (Y)
Load Cell Pole Barrier #4 Force (Y)
Load Cell Pole Barrier #5 Force (Y)
Load Cell Pole Barrier #6 Force (Y)
Load Cell Pole Barrier #7 Force (Y)
Load Cell Pole Barrier #8 Force (Y)

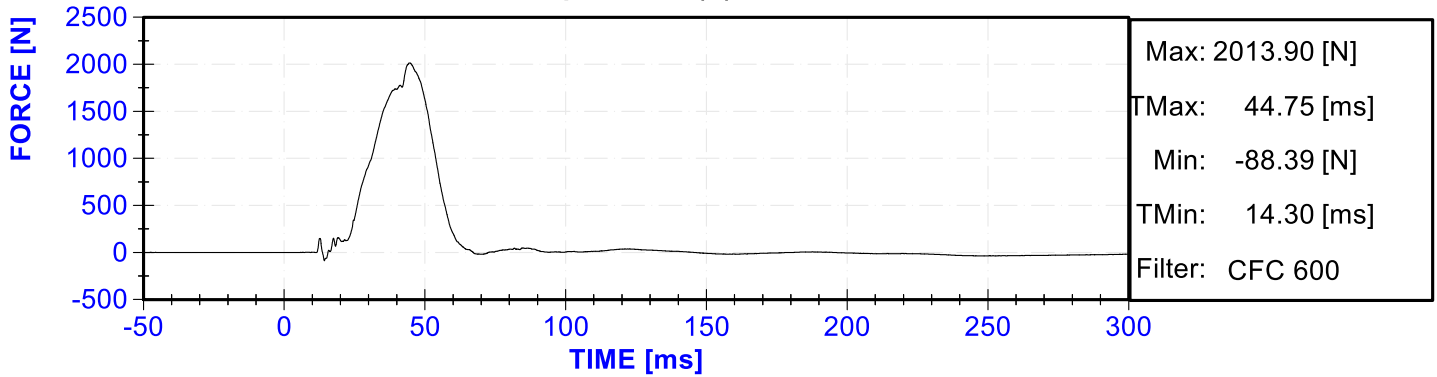




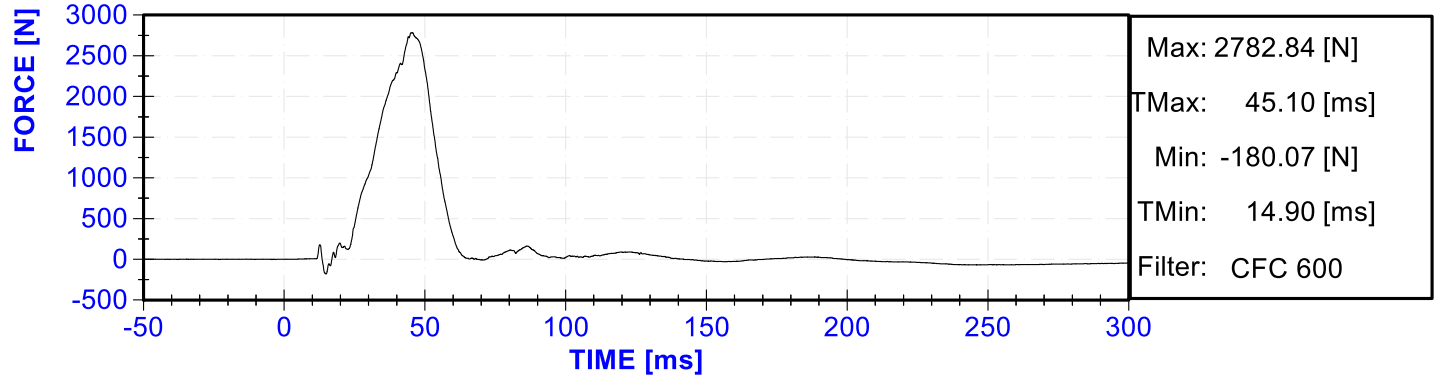
Driver Iliac Wing Force on Impact Side (Y) vs. Time



Driver Acetabulum Force on Impact Side (Y) vs. Time



Driver Total Pelvis Force on Impact Side (Y) vs. Time



APPENDIX C

DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

CALIBRATION TEST RESULTS

PRE-TEST

SID-IIS 5TH PERCENTILE FEMALE - DRIVER ATD

SERIAL NO: 300

(CONFIGURED FOR LEFT SIDE IMPACT)

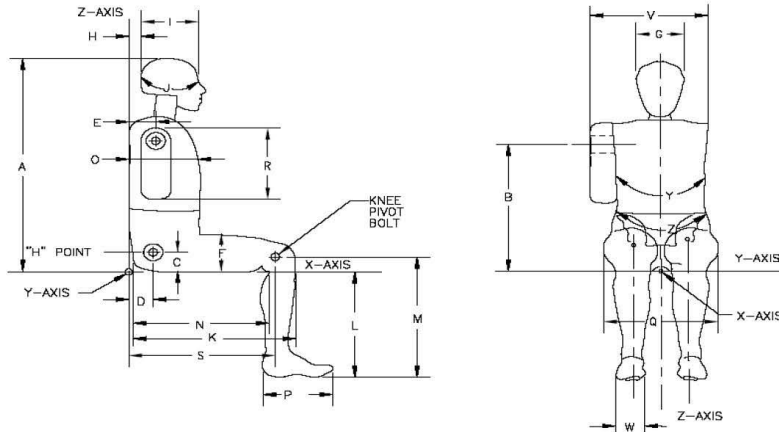


External Measurements - SID-IIs

Technician: K. Dutton

Date: 01/04/2021

Dummy Serial Number: 300



| Symbol | Description | Specification (mm) | | Result (mm) | Pass/Fail |
|--------|------------------------------|--------------------|-----|-------------|-----------|
| A | Sitting Height | 772 | 788 | 781 | Pass |
| B | Shoulder Pivot Height | 437 | 453 | 440 | Pass |
| C | H-point Height | 79 | 89 | 85 | Pass |
| D | H-point from seatback | 141 | 151 | 146 | Pass |
| E | Shoulder Pivot from Backline | 97 | 107 | 102 | Pass |
| F | Thigh Clearance | 119 | 135 | 126 | Pass |
| G | Head Breadth | 140 | 148 | 144 | Pass |
| H | Head Back from Backline | 40 | 46 | 42 | Pass |
| I | Head Depth | 178 | 188 | 187 | Pass |
| J | Head Circumference | 541 | 551 | 544 | Pass |
| K | Buttock to Knee Length | 514 | 540 | 532 | Pass |
| L | Popliteal Height | 343 | 369 | 361 | Pass |
| M | Knee Pivot to floor height | 392 | 409 | 400 | Pass |
| N | Buttock Popliteal Length | 416 | 442 | 430 | Pass |
| O | Chest Depth w/o jacket | 195 | 211 | 208 | Pass |
| P | Foot Length | 216 | 232 | 220 | Pass |
| Q | Hip Breadth (w/pelvic plugs) | 313 | 323 | 317 | Pass |
| R | Arm Length | 249 | 259 | 254 | Pass |
| S | Knee Joint to seatback | 477 | 493 | 484 | Pass |
| V | Shoulder Width | 341 | 357 | 352 | Pass |
| W | Foot Width | 78 | 94 | 83 | Pass |
| Y | Chest Circumference w/jacket | 851 | 881 | 875 | Pass |
| Z | Waist Circumference | 761 | 791 | 773 | Pass |

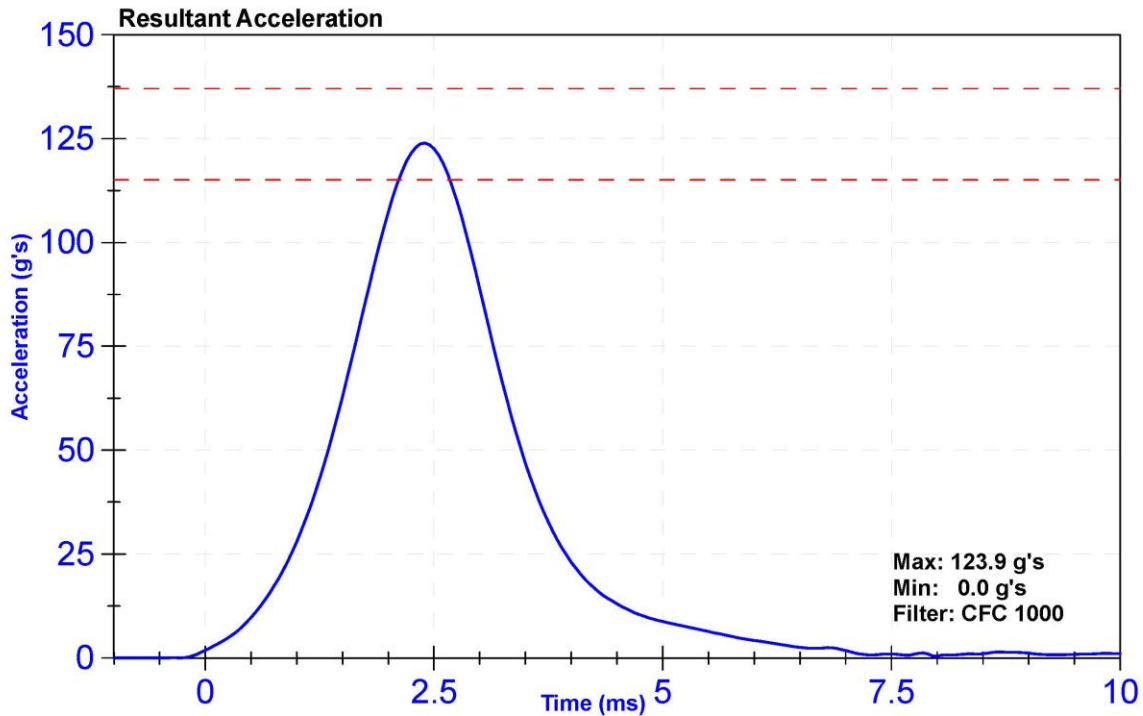
| | | | |
|-------------------|------|-----------------------|------------|
| ATD Manufacturer | FTSS | Test Technician | S. Vacanti |
| ATD Serial Number | 300 | Laboratory Supervisor | K. Brogan |

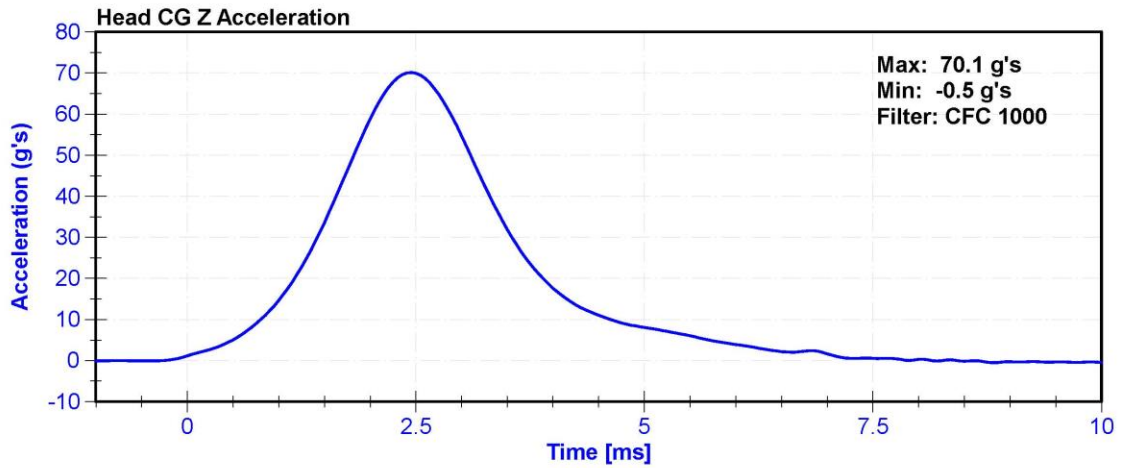
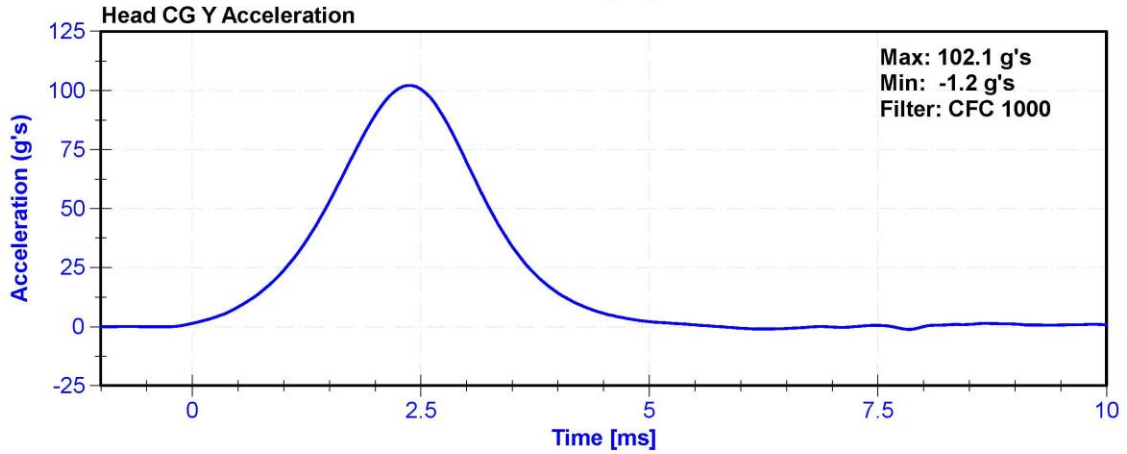
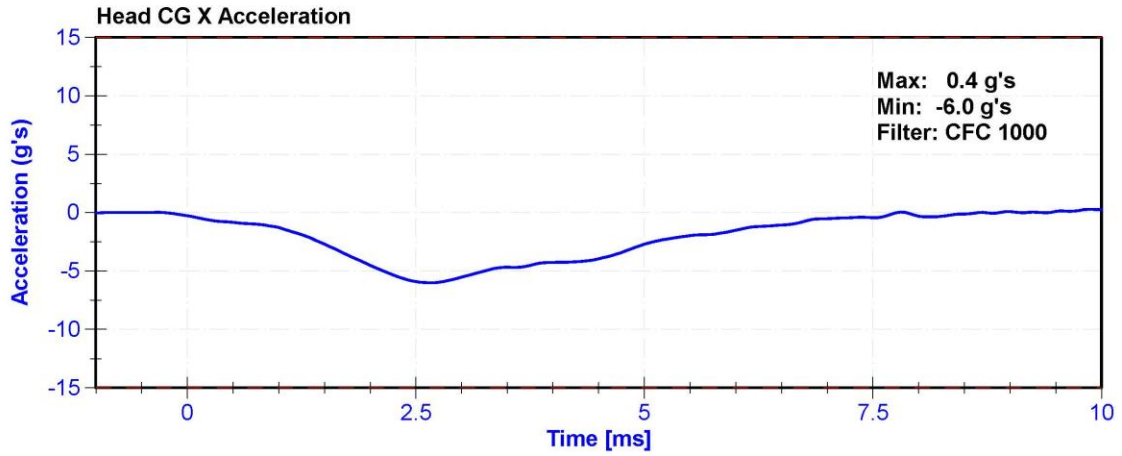
Results

| Test Parameter | Minimum Specification | Maximum Specification | Unit | Result | Pass/Fail |
|------------------------|-----------------------|-----------------------|------|--------|-----------|
| Temperature | 20.6 | 22.2 | °C | 21 | Pass |
| Humidity | 10 | 70 | % | 34 | Pass |
| Resultant Acceleration | 115 | 137 | g's | 123.9 | Pass |
| Oscillation | 0 | 15 | % | 2.0 | Pass |
| Fore-Aft Acceleration | -15 | 15 | g's | -6.0 | Pass |

Transducer Calibrations

| Channel | Manufacturer | Serial Number | Calibration Date | Calibration Due Date |
|-----------------|----------------|---------------|------------------|----------------------|
| X Accelerometer | ENDEVCO 7264CT | AC-P59018 | 11/10/2020 | 5/11/2021 |
| Y Accelerometer | ENDEVCO 7264 | AC-P79189 | 11/10/2020 | 5/11/2021 |
| Z Accelerometer | ENDEVCO 7264CT | AC-P58777 | 11/10/2020 | 5/11/2021 |





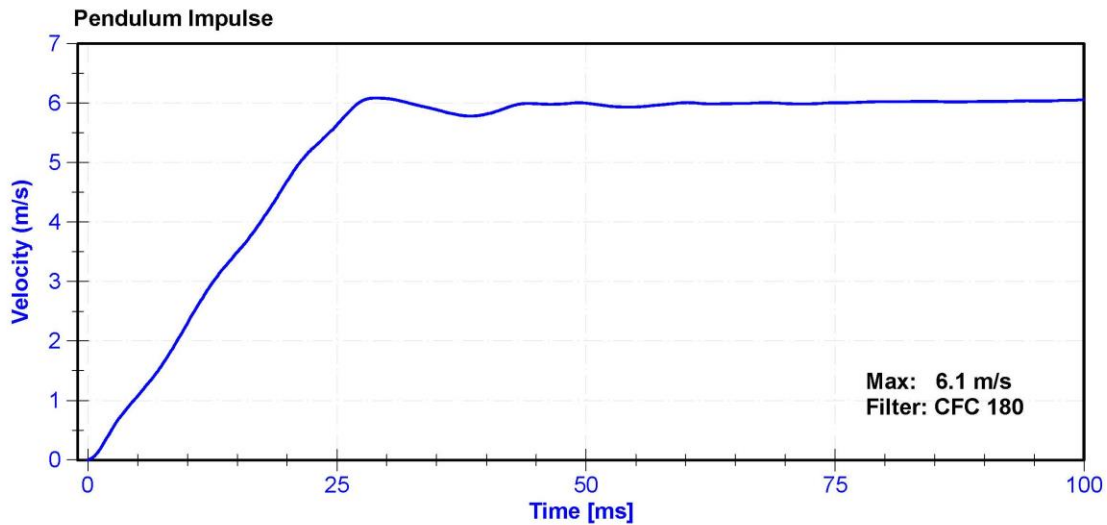
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|-------------------|------|-----------------------|------------|
| ATD Manufacturer | FTSS | Test Technician | S. Vacanti |
| ATD Serial Number | 300 | Laboratory Supervisor | K. Brogan |

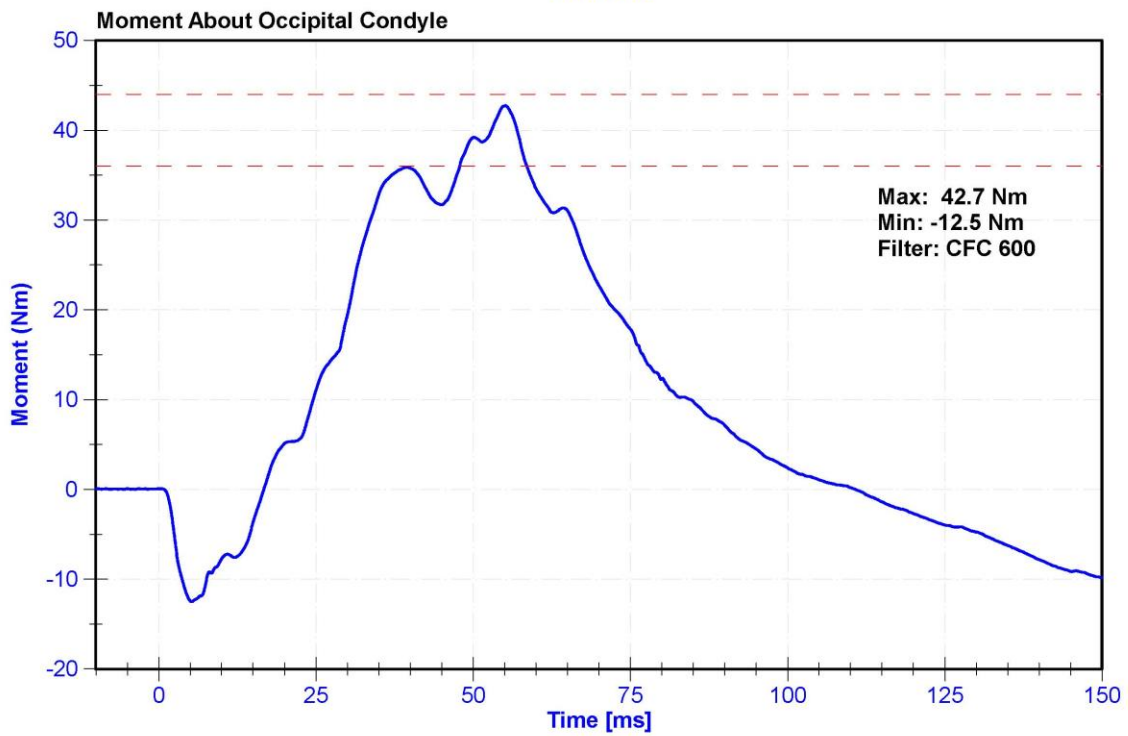
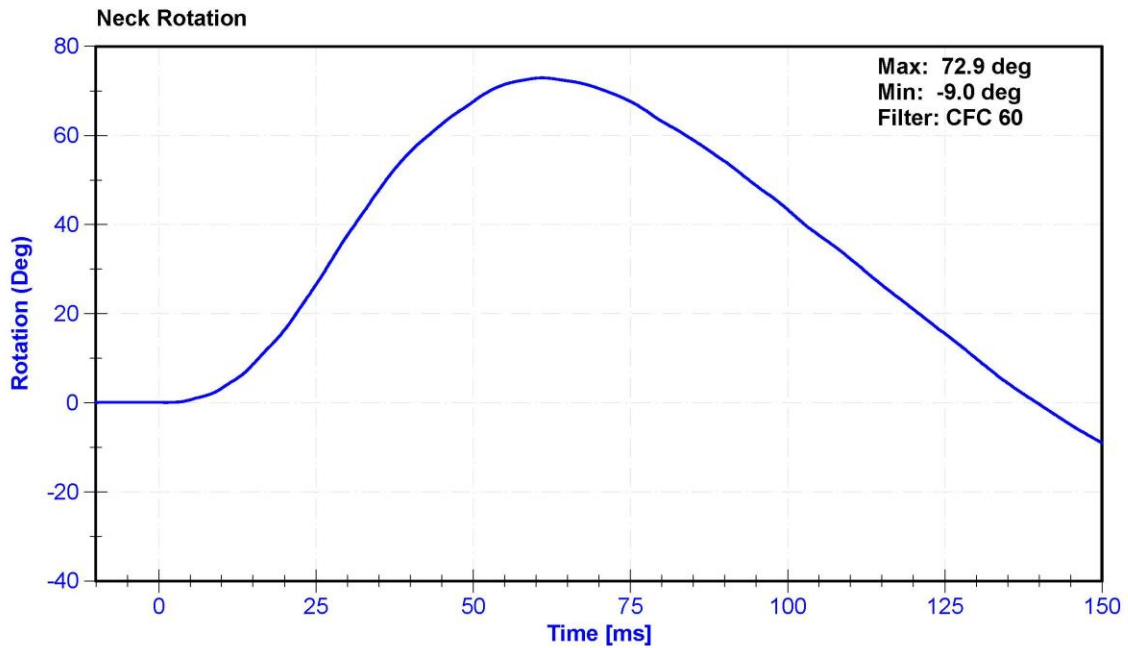
Results

| Test Parameter | Minimum Specification | Maximum Specification | Unit | Result | Pass/Fail |
|-----------------------------------|-----------------------|-----------------------|------|--------|-----------|
| Temperature | 20.6 | 22.2 | °C | 21.5 | Pass |
| Humidity | 10 | 70 | % | 34.6 | Pass |
| Velocity | 5.51 | 5.63 | m/s | 5.584 | Pass |
| Pendulum Impulse at 10ms | 2.2 | 2.8 | m/s | 2.30 | Pass |
| Pendulum Impulse at 15ms | 3.3 | 4.1 | m/s | 3.49 | Pass |
| Pendulum Impulse at 20ms | 4.4 | 5.4 | m/s | 4.69 | Pass |
| Pendulum Impulse at 25ms | 5.4 | 6.1 | m/s | 5.63 | Pass |
| Pendulum Impulse from 25 to 100ms | 5.5 | 6.2 | m/s | 6.08 | Pass |
| Neck Rotation | 71 | 81 | deg | 72.9 | Pass |
| Time at Maximum Rotation | 50 | 70 | ms | 61.0 | Pass |
| Moment about the OC | 36 | 44 | Nm | 42.7 | Pass |
| Moment Decay to 0 Nm | 102 | 126 | ms | 110.9 | Pass |

Transducer Calibrations

| Channel | Manufacturer | Serial Number | Calibration Date | Calibration Due Date |
|------------------------|------------------|-------------------|------------------|----------------------|
| Pendulum Accelerometer | ENDEVCO 7231CT | AC-C16503 Striker | 2/6/2020 | 2/5/2021 |
| Pendulum Potentiometer | Denton 78051-342 | DS-184Pend | 11/6/2020 | 11/6/2021 |
| Condyle Potentiometer | Denton 78051-342 | DS-185Pend | 11/6/2020 | 11/6/2021 |
| Upper Neck Load Cell | Denton 1716 | 17162019 FY | 3/18/2020 | 3/18/2021 |





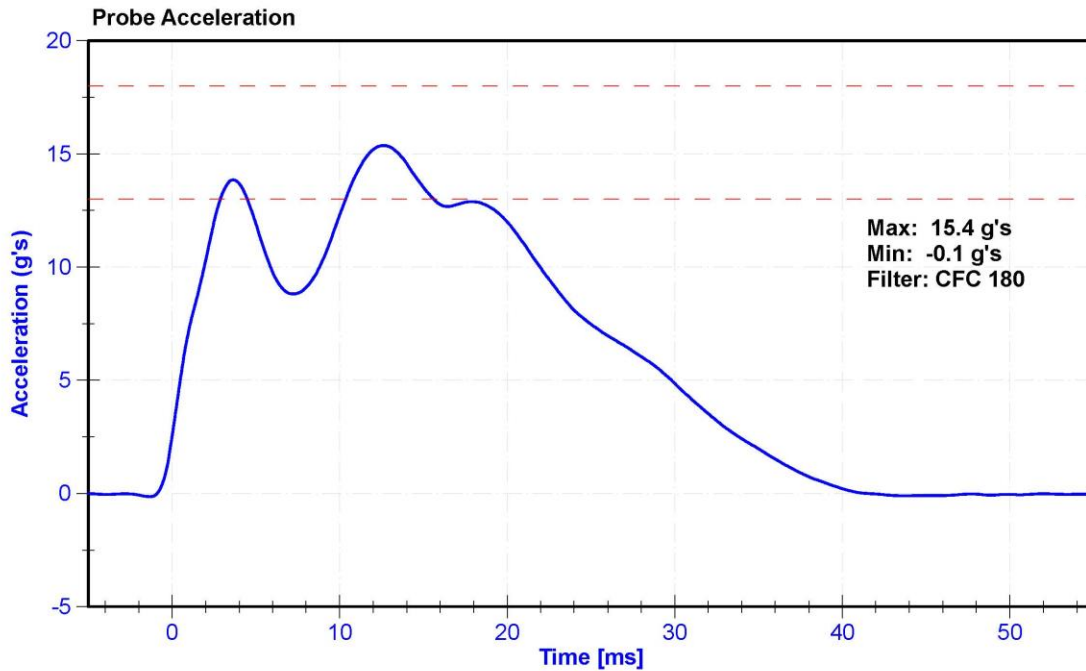
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|-------------------|------|-----------------------|------------|
| ATD Manufacturer | FTSS | Test Technician | S. Vacanti |
| ATD Serial Number | 300 | Laboratory Supervisor | K. Brogan |

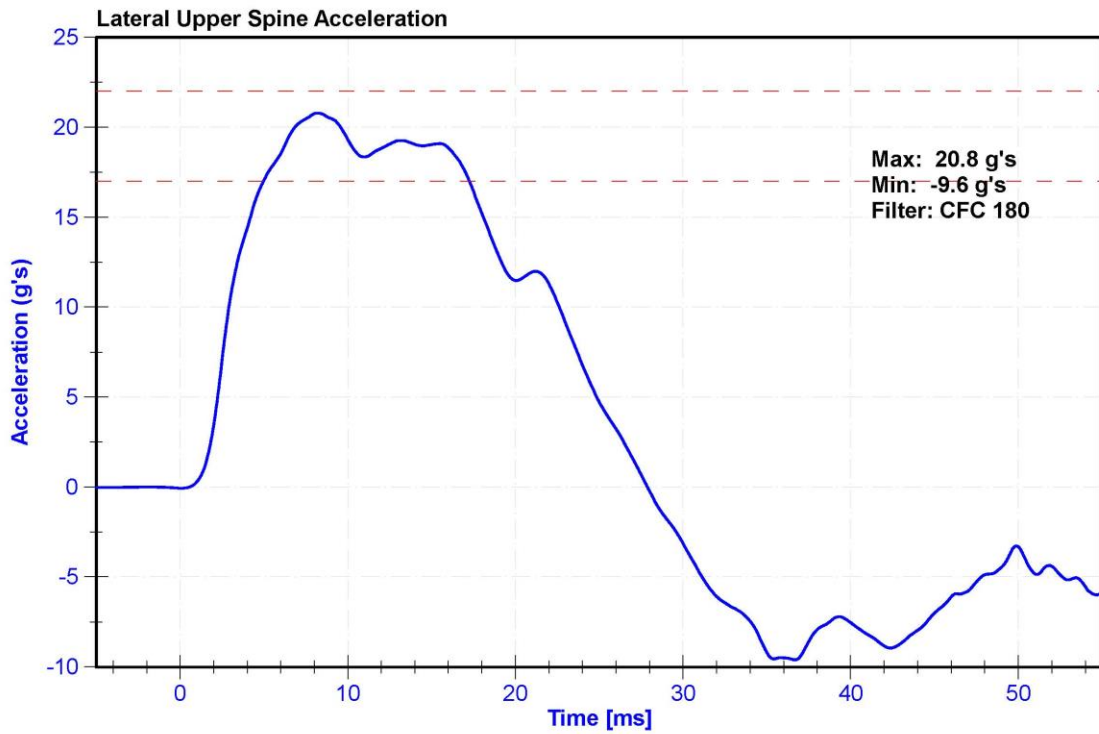
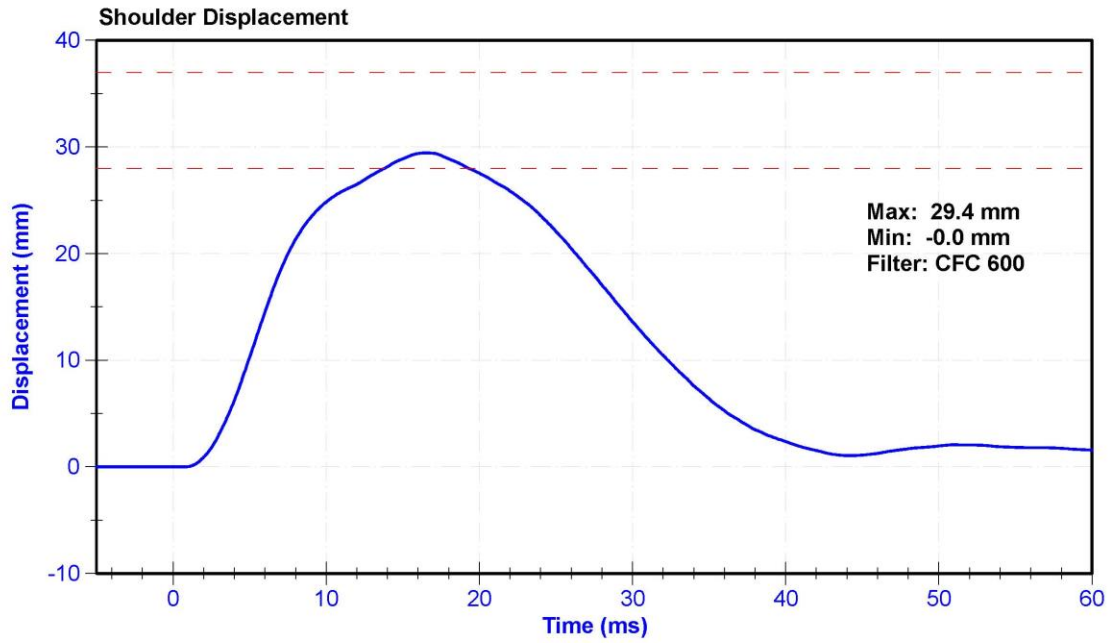
Results

| Test Parameter | Minimum Specification | Maximum Specification | Unit | Result | Pass/Fail |
|----------------------------------|-----------------------|-----------------------|------|--------|-----------|
| Temperature | 20.6 | 22.2 | °C | 21 | Pass |
| Humidity | 10 | 70 | % | 34 | Pass |
| Velocity | 4.2 | 4.4 | m/s | 4.29 | Pass |
| Probe Acceleration | 13 | 18 | g's | 15.4 | Pass |
| Shoulder Deflection | 28 | 37 | mm | 29.4 | Pass |
| Lateral Upper Spine Acceleration | 17 | 22 | g's | 20.8 | Pass |

Transducer Calibrations

| Channel | Manufacturer | Serial Number | Calibration Date | Calibration Due Date |
|-----------------------------|------------------|---------------|------------------|----------------------|
| Pendulum Accelerometer | MSI 64C-2000 | A286228 | 1/29/2020 | 1/28/2021 |
| Shoulder Potentiometer | Servo 08CT1-3725 | DS-053 GFE | 11/10/2020 | 5/11/2021 |
| Upper Spine Y Accelerometer | ENDEVCO 7264CT | AC-P71281 | 11/9/2020 | 5/10/2021 |





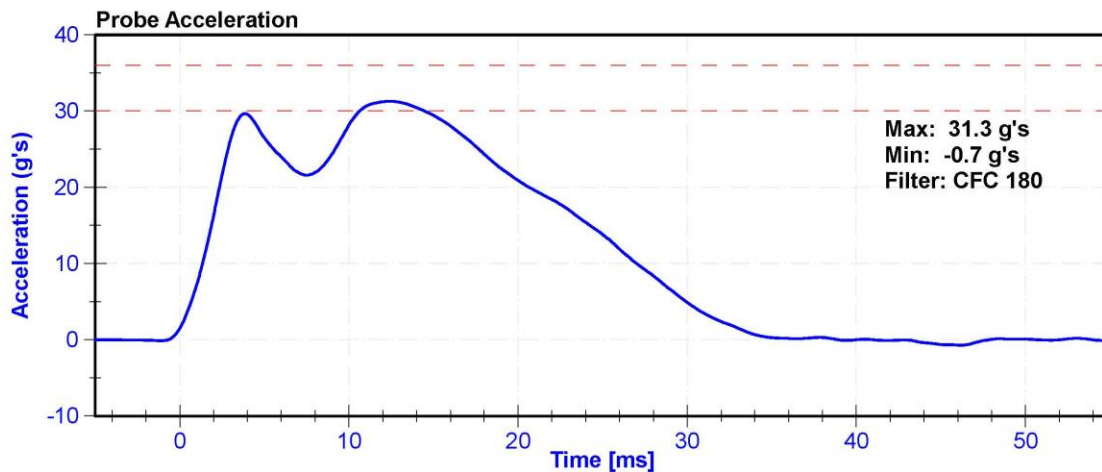
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|-------------------|------|-----------------------|------------|
| ATD Manufacturer | FTSS | Test Technician | S. Vacanti |
| ATD Serial Number | 300 | Laboratory Supervisor | K. Brogan |

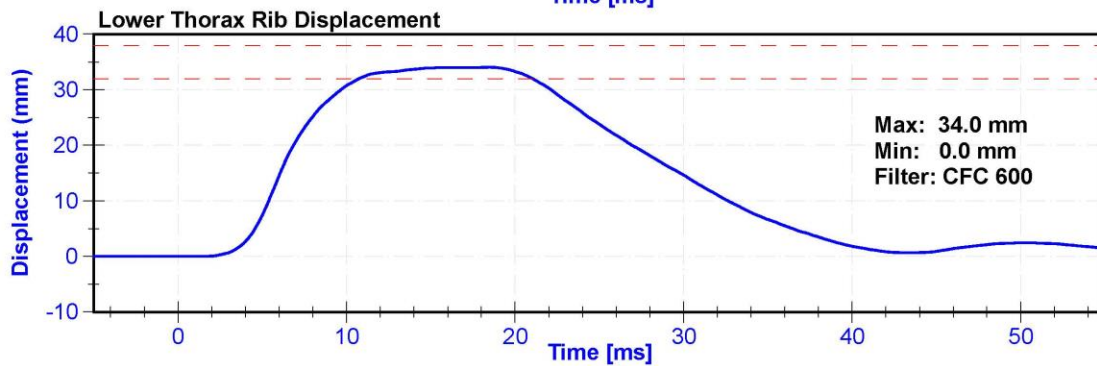
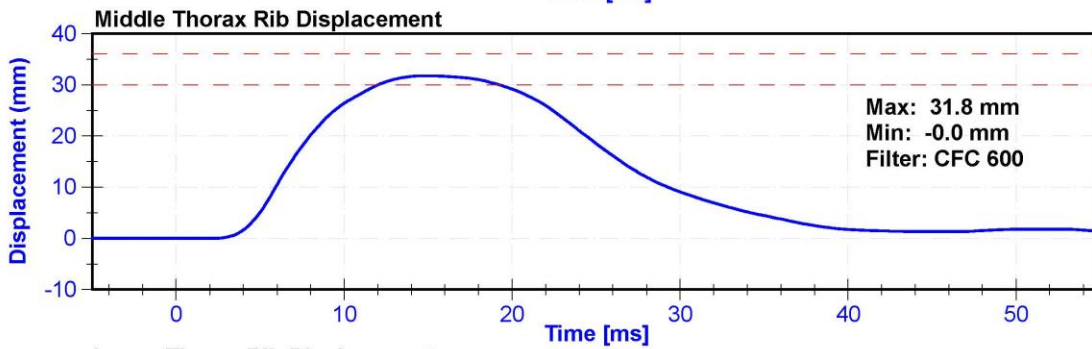
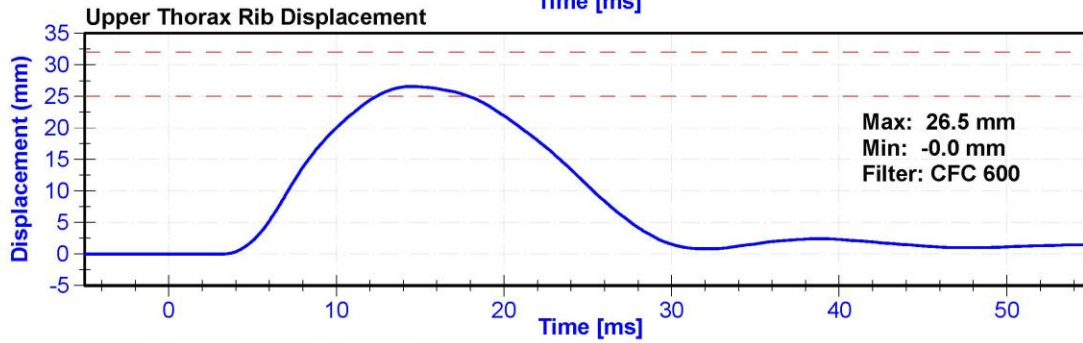
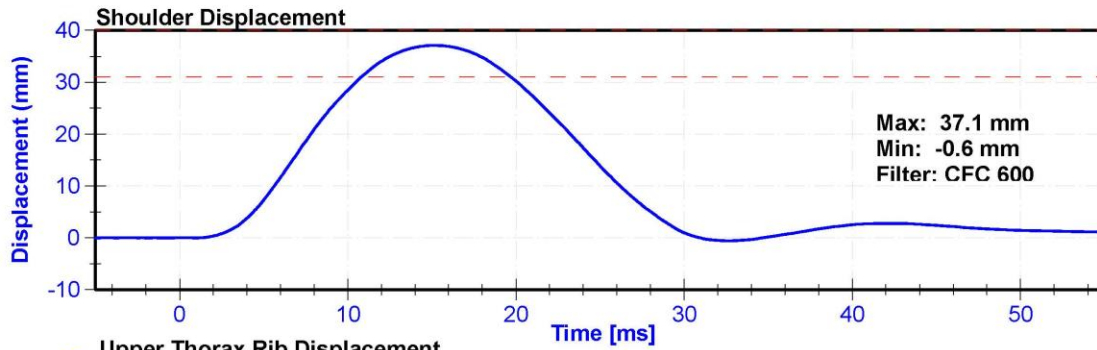
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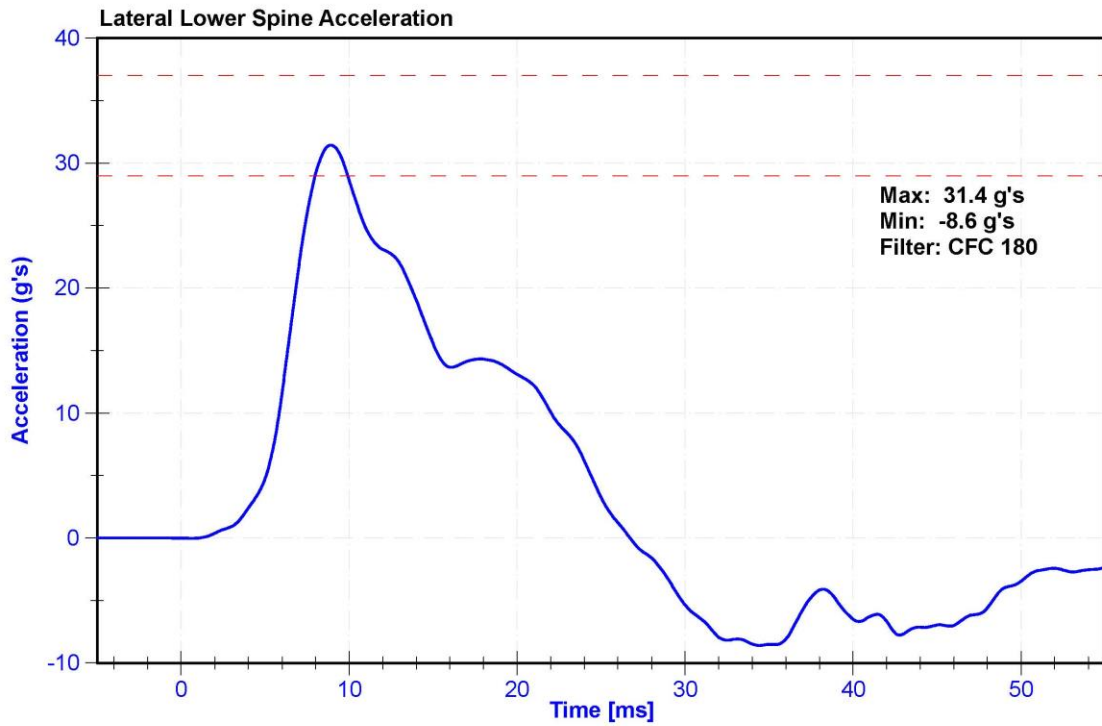
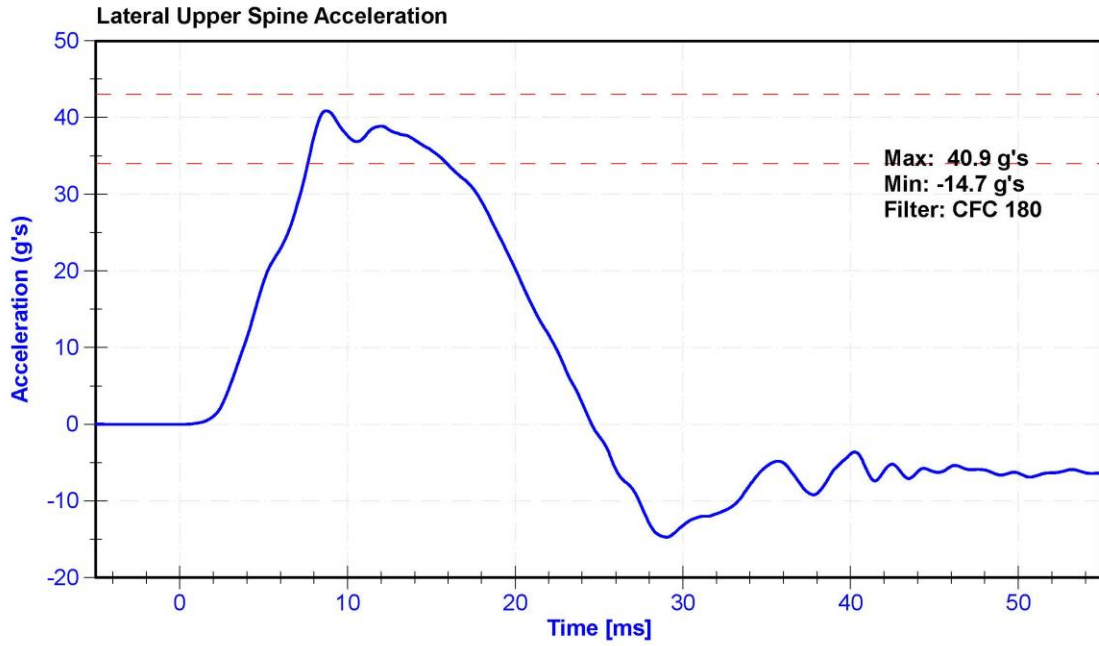
| Test Parameter | Minimum Specification | Maximum Specification | Unit | Result | Pass/Fail |
|----------------------------------|-----------------------|-----------------------|------|--------|-----------|
| Temperature | 20.6 | 22.2 | °C | 21.0 | Pass |
| Humidity | 10 | 70 | % | 34.0 | Pass |
| Velocity | 6.6 | 6.8 | m/s | 6.74 | Pass |
| Probe Acceleration after 5 ms | 30 | 36 | g's | 31.3 | Pass |
| Lateral Upper Spine Acceleration | 34 | 43 | g's | 40.9 | Pass |
| Lateral Lower Spine Acceleration | 29 | 37 | g's | 31.4 | Pass |
| Shoulder Deflection | 31 | 40 | mm | 37.1 | Pass |
| Upper Thorax Rib Deflection | 25 | 32 | mm | 26.5 | Pass |
| Mid Thorax Rib Deflection | 30 | 36 | mm | 31.8 | Pass |
| Lower Thorax Rib Deflection | 32 | 38 | mm | 34.0 | Pass |

Transducer Calibrations

| Channel | Manufacturer | Serial Number | Calibration Date | Calibration Due Date |
|---------------------------------|------------------|---------------|------------------|----------------------|
| Pendulum Accelerometer | MSI 64C-2000 | A286228 | 1/29/2020 | 1/28/2021 |
| Upper Spine T1 Y Accelerometer | ENDEVCO 7264CT | AC-P71281 | 11/9/2020 | 5/10/2021 |
| Upper Spine T12 Y Accelerometer | ENDEVCO 7264 | AC-P64147 | 11/9/2020 | 5/10/2021 |
| Shoulder Potentiometer | Servo 08CT1-3725 | DS-053 GFE | 11/10/2020 | 5/11/2021 |
| Upper Thorax Rib Potentiometer | Servo 08CT1-3725 | DS-451GFE | 11/10/2020 | 5/11/2021 |
| Middle Thorax Rib Potentiometer | Servo 08TC1-3745 | DS-040GFE | 11/10/2020 | 5/11/2021 |
| Lower Thorax Rib Potentiometer | Servo 08TC1-3725 | DS-1156GFE | 11/9/2020 | 5/10/2021 |







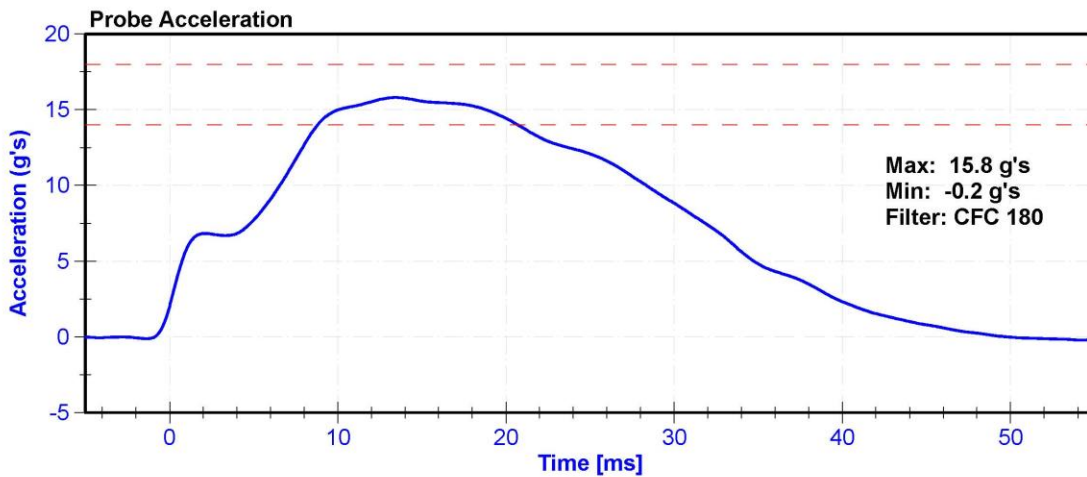
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|-------------------|------|-----------------------|------------|
| ATD Manufacturer | FTSS | Test Technician | S. Vacanti |
| ATD Serial Number | 300 | Laboratory Supervisor | K. Brogan |

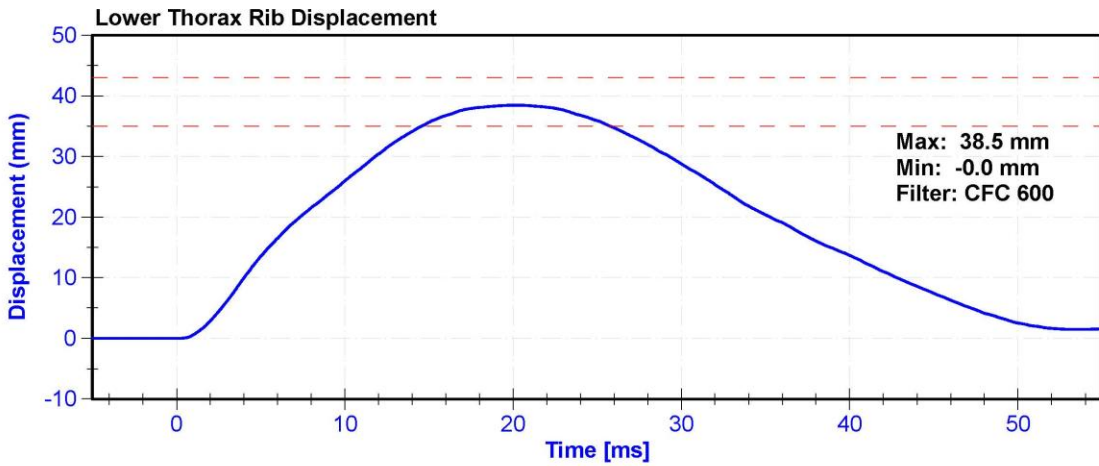
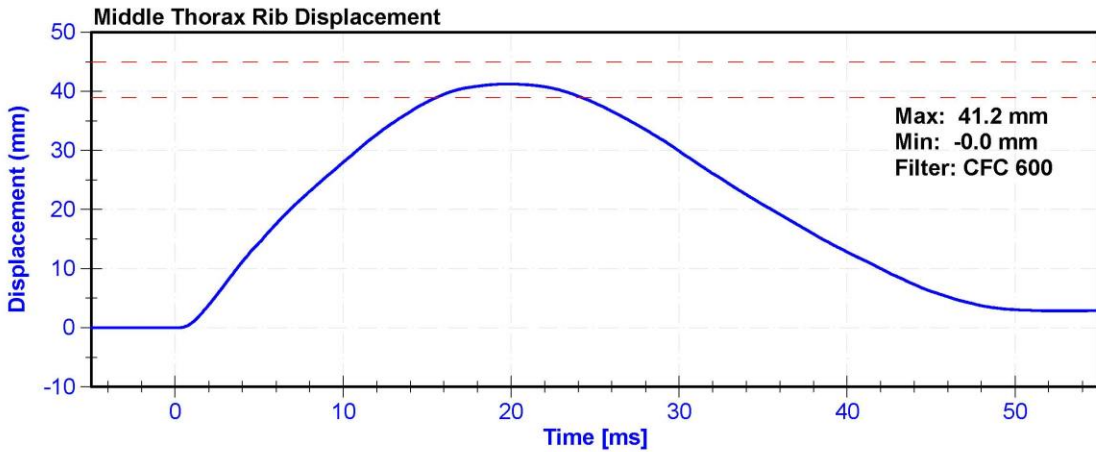
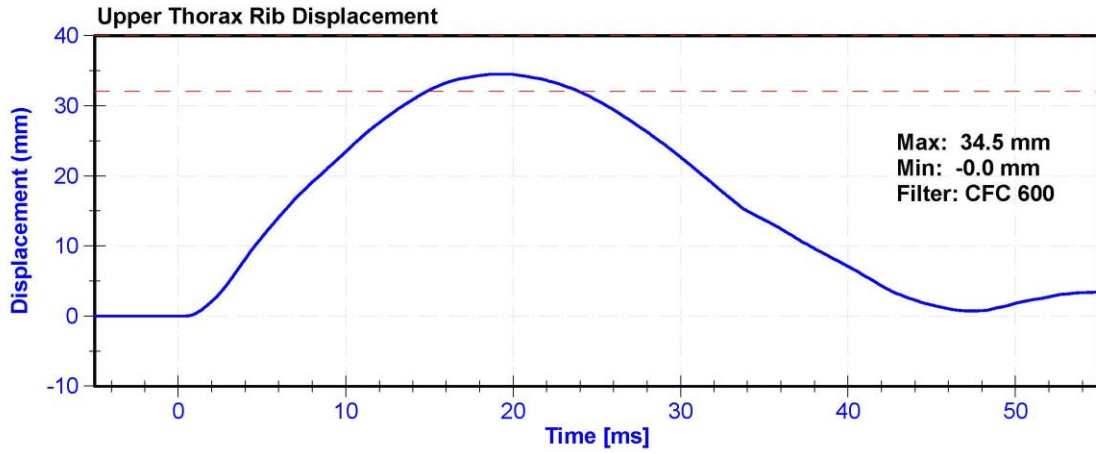
Results

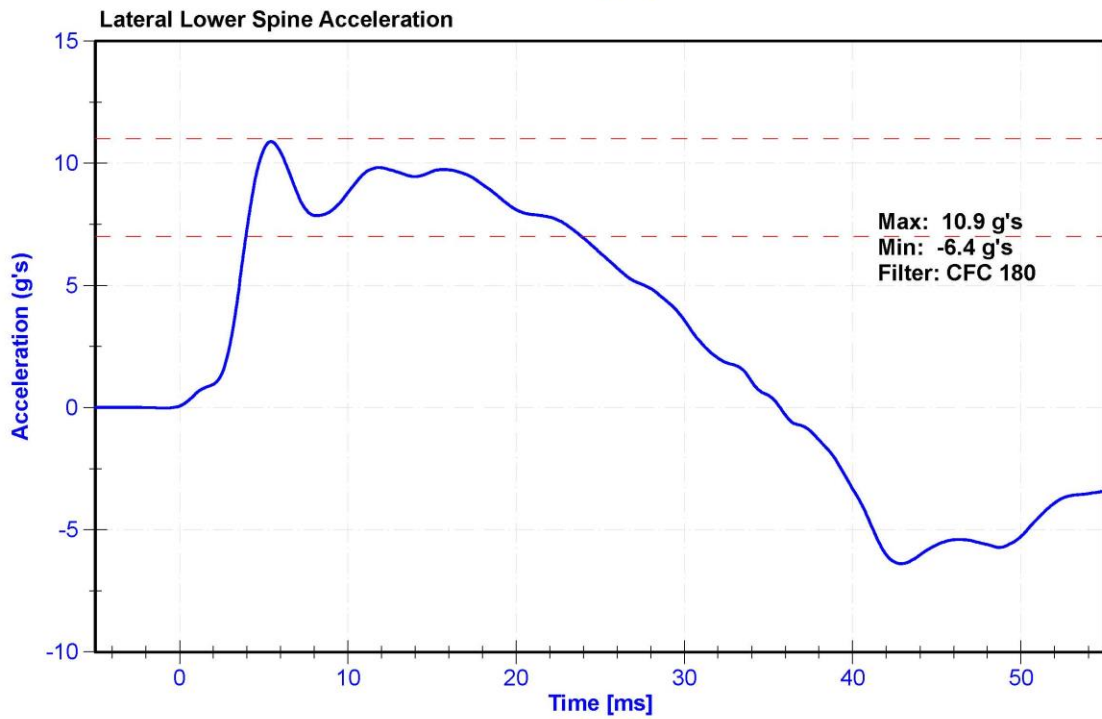
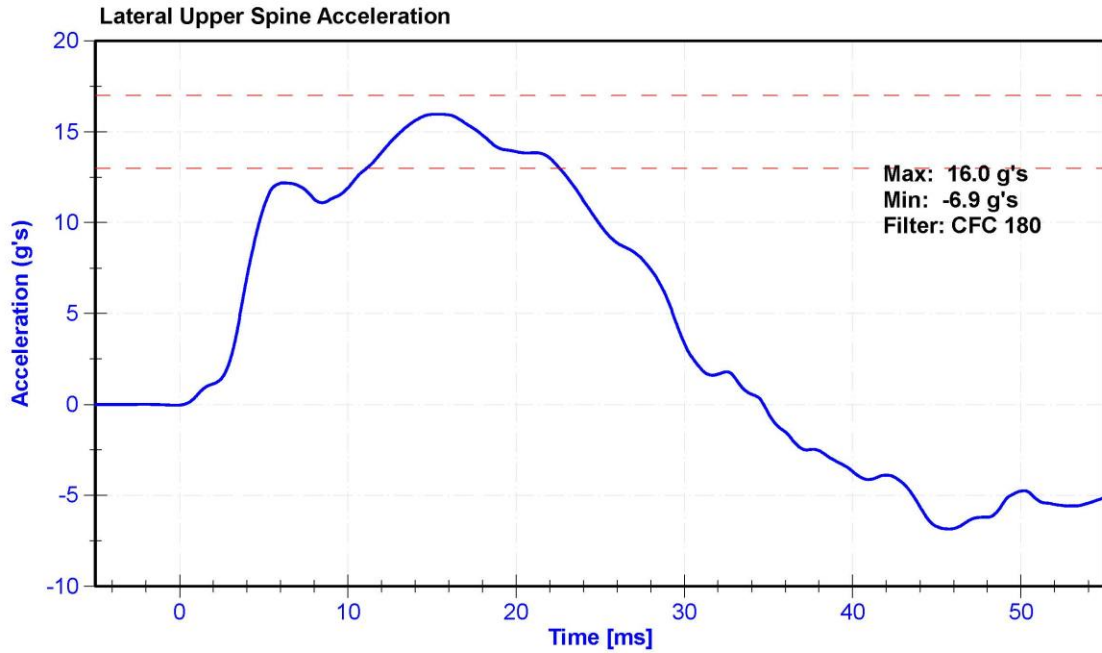
| Test Parameter | Minimum Specification | Maximum Specification | Unit | Result | Pass/Fail |
|----------------------------------|-----------------------|-----------------------|------|--------|-----------|
| Temperature | 20.6 | 22.2 | °C | 21 | Pass |
| Humidity | 10 | 70 | % | 34 | Pass |
| Velocity | 4.2 | 4.4 | m/s | 4.36 | Pass |
| Probe Acceleration | 14 | 18 | g's | 15.8 | Pass |
| Lateral Upper Spine Acceleration | 13 | 17 | g's | 16.0 | Pass |
| Lateral Lower Spine Acceleration | 7 | 11 | g's | 10.9 | Pass |
| Upper Thorax Rib Deflection | 32 | 40 | mm | 34.5 | Pass |
| Middle Thorax Rib Deflection | 39 | 45 | mm | 41.2 | Pass |
| Lower Thorax Rib Deflection | 35 | 43 | mm | 38.5 | Pass |

Transducer Calibrations

| Channel | Manufacturer | Serial Number | Calibration Date | Calibration Due Date |
|---------------------------------|------------------|---------------|------------------|----------------------|
| Pendulum Accelerometer | MSI 64C-2000 | A286228 | 1/29/2020 | 1/28/2021 |
| Upper Spine Y Accelerometer | ENDEVCO 7264CT | AC-P71281 | 11/9/2020 | 5/10/2021 |
| Lower Spine Y Accelerometer | ENDEVCO 7264 | AC-P64147 | 11/9/2020 | 5/10/2021 |
| Upper Thorax Rib Potentiometer | Servo 08CT1-3725 | DS-451GFE | 11/10/2020 | 5/11/2021 |
| Middle Thorax Rib Potentiometer | Servo 08TC1-3745 | DS-040GFE | 11/10/2020 | 5/11/2021 |
| Lower Thorax Rib Potentiometer | Servo 08TC1-3725 | DS-1156GFE | 11/9/2020 | 5/10/2021 |







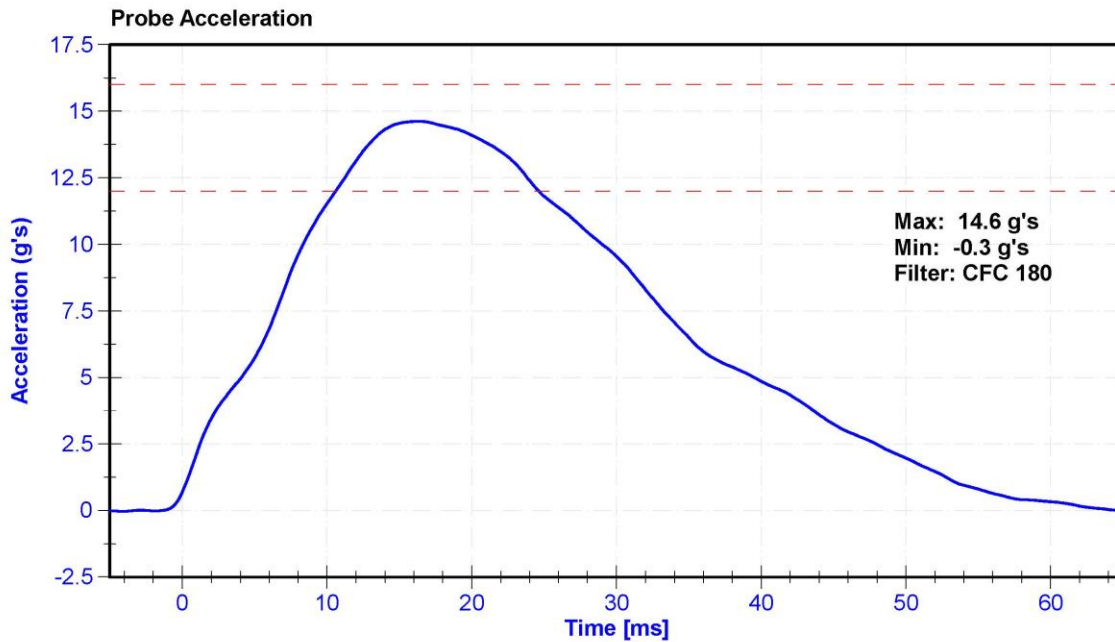
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|-------------------|------|-----------------------|------------|
| ATD Manufacturer | FTSS | Test Technician | D.Reinhard |
| ATD Serial Number | 300 | Laboratory Supervisor | K. Brogan |

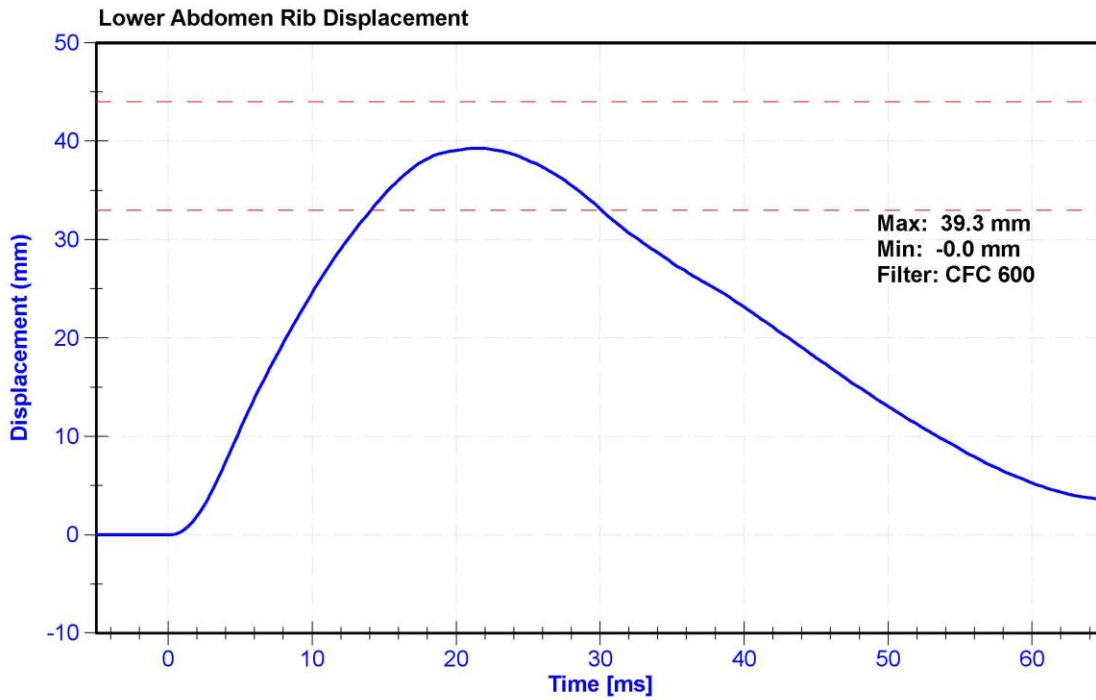
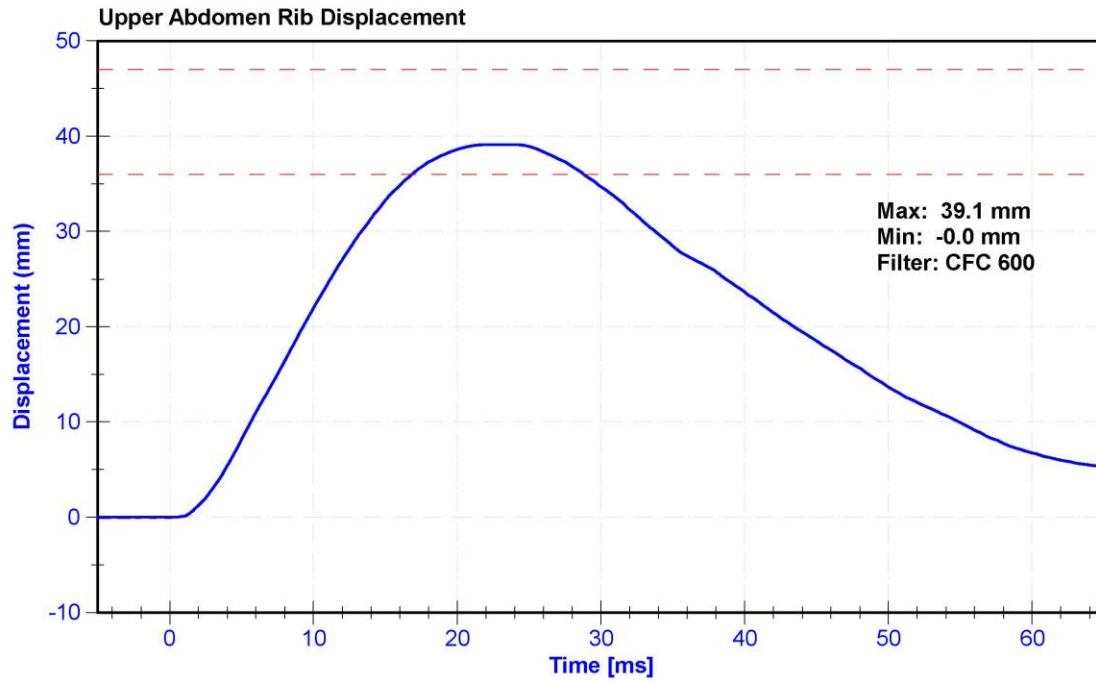
Results

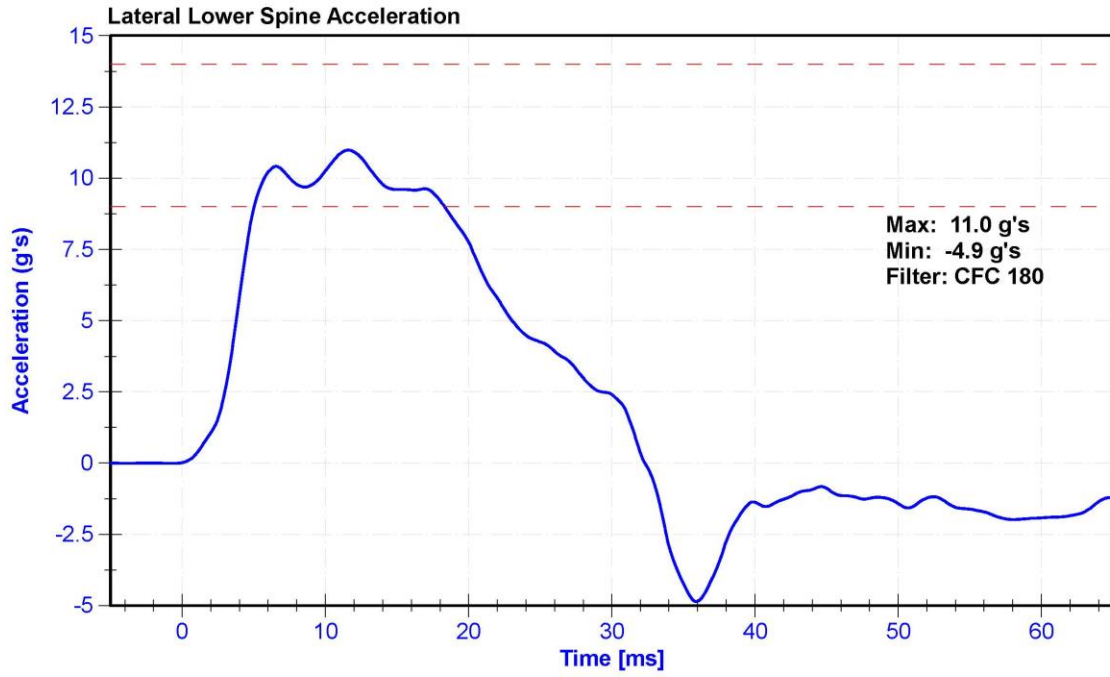
| Test Parameter | Minimum Specification | Maximum Specification | Unit | Result | Pass/Fail |
|----------------------------------|-----------------------|-----------------------|------|--------|-----------|
| Temperature | 20.6 | 22.2 | °C | 20.9 | Pass |
| Humidity | 10 | 70 | % | 29.0 | Pass |
| Velocity | 4.2 | 4.4 | m/s | 4.31 | Pass |
| Probe Acceleration | 12 | 16 | g's | 14.6 | Pass |
| Lateral Lower Spine Acceleration | 9 | 14 | g's | 11.0 | Pass |
| Upper Abdomen Rib Deflection | 36 | 47 | mm | 39.1 | Pass |
| Lower Abdomen Rib Deflection | 33 | 44 | mm | 39.3 | Pass |

Transducer Calibrations

| Channel | Manufacturer | Serial Number | Calibration Date | Calibration Due Date |
|---------------------------------|------------------|---------------|------------------|----------------------|
| Probe Accelerometer | MSI 64C-2000 | A286228 | 1/29/2020 | 1/28/2021 |
| Lower Spine Y Accelerometer | ENDEVCO 7264 | AC-P64147 | 11/9/2020 | 5/10/2021 |
| Upper Abdomen Rib Potentiometer | Servo 08CT1-3725 | DS-308GFE | 11/10/2020 | 5/11/2021 |
| Lower Abdomen Rib Potentiometer | Servo 08CT1-3725 | DS-307GFE | 11/10/2020 | 5/11/2021 |







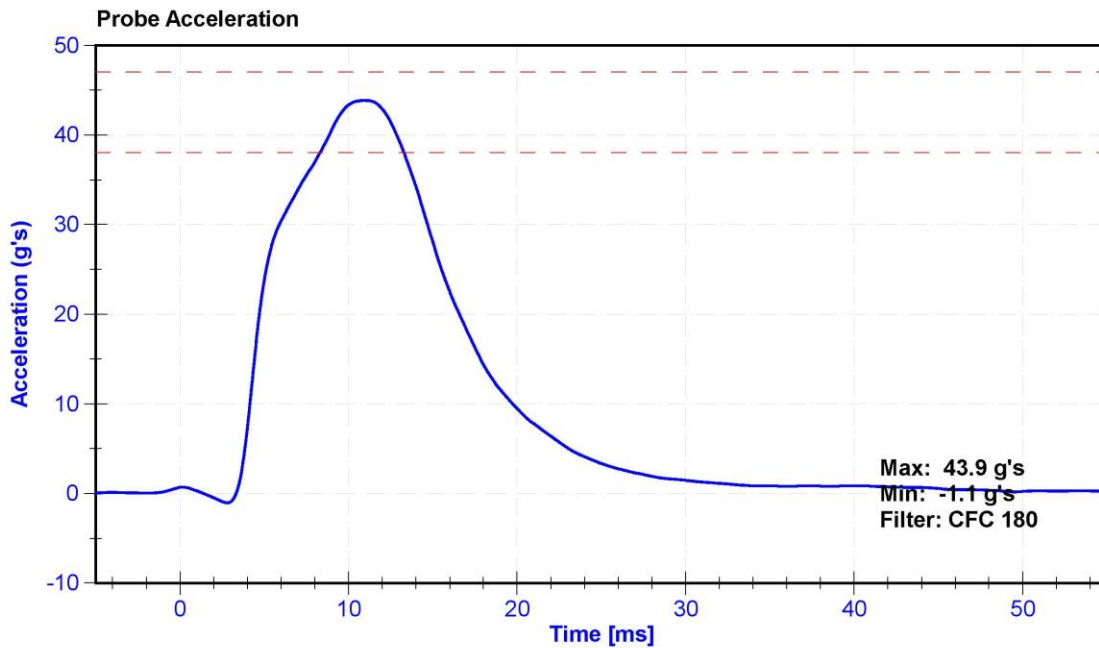
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|-------------------|------|-----------------------|------------|
| ATD Manufacturer | FTSS | Test Technician | D.Reinhard |
| ATD Serial Number | 300 | Laboratory Supervisor | K. Brogan |

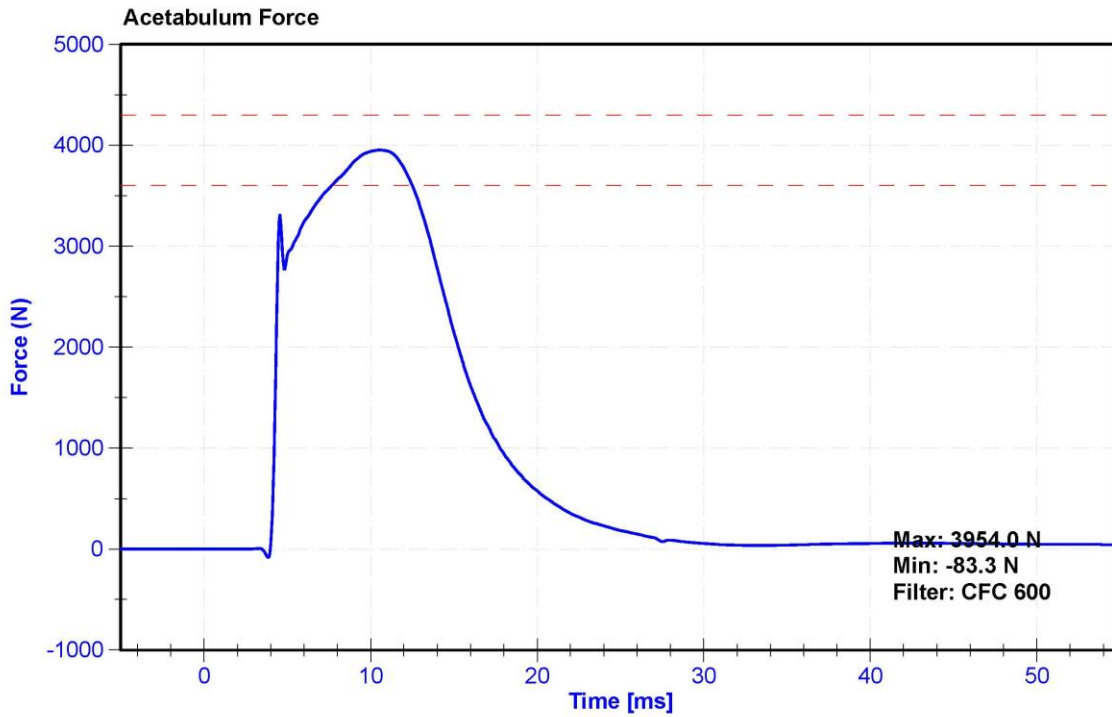
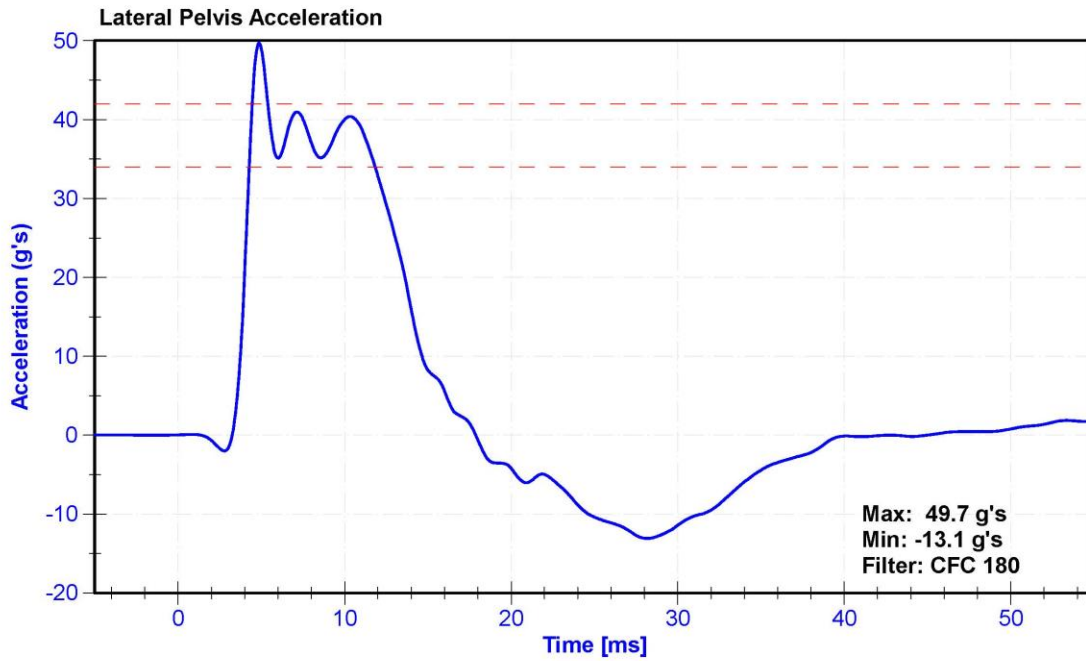
Results

| Test Parameter | Minimum Specification | Maximum Specification | Unit | Result | Pass/Fail |
|---------------------------------------|-----------------------|-----------------------|------|--------|-----------|
| Temperature | 20.6 | 22.2 | °C | 20.9 | Pass |
| Humidity | 10 | 70 | % | 29 | Pass |
| Velocity | 6.6 | 6.8 | m/s | 6.66 | Pass |
| Probe Acceleration | 38 | 47 | g's | 43.9 | Pass |
| Lateral Pelvis Acceleration after 6ms | 34 | 42 | g's | 41.0 | Pass |
| Acetabulum Force | 3600 | 4300 | N | 3954.0 | Pass |

Transducer Calibrations

| Channel | Manufacturer | Serial Number | Calibration Date | Calibration Due Date |
|------------------------|----------------------|---------------|------------------|----------------------|
| Pendulum Accelerometer | MSI 64C-2000 | A286228 | 1/29/2020 | 1/28/2021 |
| Pelvis Y Accelerometer | ENDEVCO 7264C-2K-TZ2 | AC-P51731 | 11/9/2020 | 5/10/2021 |
| Acetabulum Load Cell | Denton IF-520 | LC-236Fy | 3/18/2020 | 3/18/2021 |
| Certification Plug | SACO | 13533 | 9/23/2019 | N/A |
| Crash Test Plug | SACO | 13247 | 8/12/2019 | N/A |







Crush
300
1/5/21

SID-IIs Pelvis Plug Certification Test

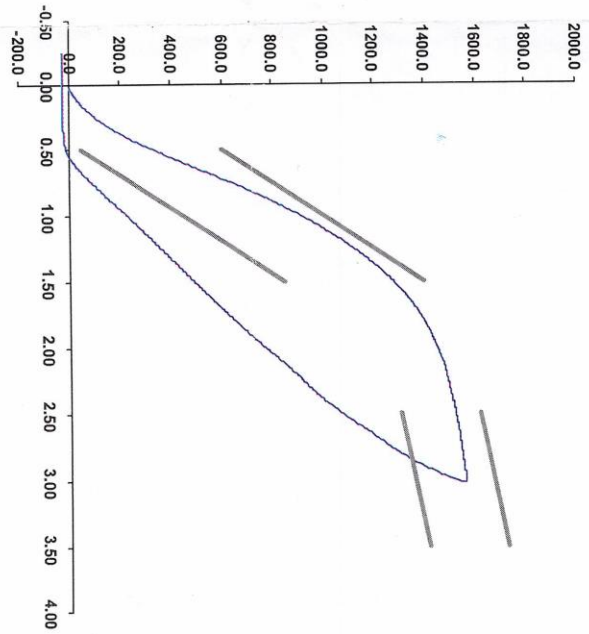
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Test Number 10669
Report Number 10705
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| Test Results | Spec Min | Spec Max |
|--------------------|----------|----------|
| Force @ 0.5 mm (N) | 50.00 | 600.00 |
| Force @ 1.5 mm (N) | 850.00 | 1,400.00 |
| Force @ 2.5 mm (N) | 1,306.00 | 1,618.00 |
| Force @ 3.0 mm (N) | 1,361.00 | 1,673.00 |

Testing Machine STM-20 5965542
 Load Cell S/N (F1360947), Units (LBS) 1000
 Crosshead Speed (mm / min) or Rate 12.7
 Extension or Position Measured by XHD_100 (XHD100)

Notes:

Force (-N) vs Extension (-mm)



Operator _____

Part Number 180-4450

Template No 107 12-Aug-19

SACO Research

By: DC Date: 8/12/2019

SACO Research 41735 Elm St, #401 Murrieta, CA 92562 Tel 310-694-2082 FAX



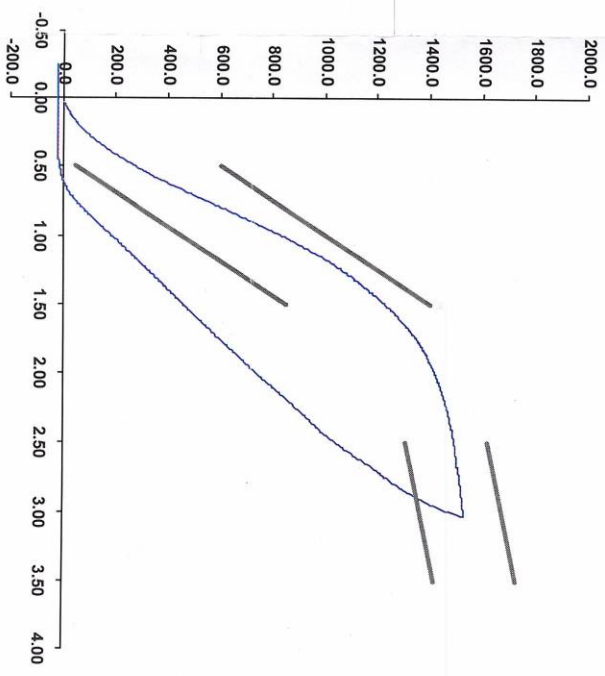
Cert 1
300
1/5/21

SID-11s Pelvis Plug Certification Test

Plug S/N 13533
 Test Number 11177
 Report Number 11215
 Test Date 9/23/2019 10:53:47 AM

| Test Results | Spec Min | Spec Max |
|--------------------|----------|----------|
| Force @ 0.5 mm (N) | 50.00 | 600.00 |
| Force @ 1.5 mm (N) | 850.00 | 1,400.00 |
| Force @ 2.5 mm (N) | 1,306.00 | 1,618.00 |
| Force @ 3.0 mm (N) | 1,361.00 | 1,673.00 |

Testing Machine STM-20 5965542
 Load Cell S/N (F1360947), Units (LBS) 1000
 Crosshead Speed (mm / min) or Rate 12.7
 Extension or Position Measured by XHD_100 (XHD100)



Notes:

Operator

Part Number 180-4450

Template No 107 23-Sep-19
 SACO Research

By: DC Date: 9/23/2019
 SACO Research 41735 Elm St #401 Murrieta, CA 92562 Tel 310-694-2082 FAX



Non Impact Side
300
1/5/19

SID-11s Pelvis Plug Certification Test

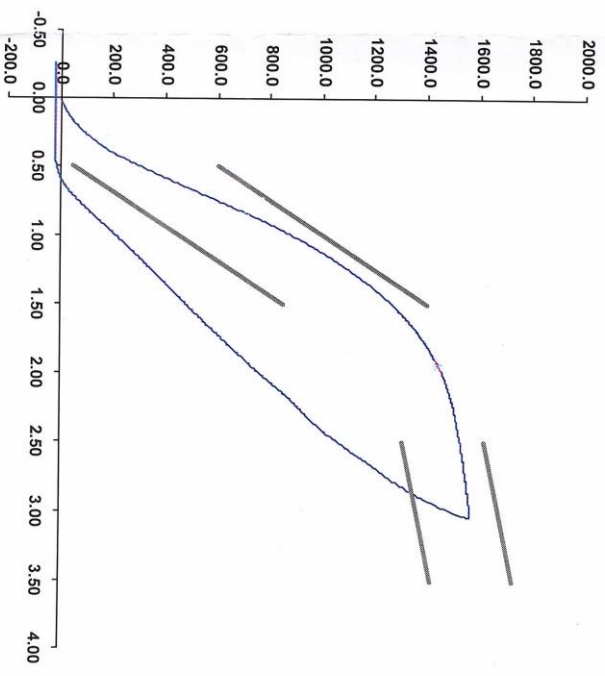
Plug S/N 13276
Test Number 10699
Report Number 10736
Test Date 8/12/2019 10:33:42 AM

Force (-N) vs Extension (-mm)

| Test Results | Spec Min | Spec Max |
|--------------------|----------|----------|
| Force @ 0.5 mm (N) | 50.00 | 600.00 |
| Force @ 1.5 mm (N) | 850.00 | 1,400.00 |
| Force @ 2.5 mm (N) | 1,306.00 | 1,618.00 |
| Force @ 3.0 mm (N) | 1,361.00 | 1,673.00 |

Testing Machine STM-20 596554;
Load Cell S/N (F1360947), Units (LBS) 1000
Crosshead Speed (mm / min) or Rate 12.7
Extension or Position Measured by XHD_100 (XHD100)

Notes:



Operator

Part Number 180-4450

Template No 107 12-Aug-19
SACO Research

By: DC Date: 8/12/2019
SACO Research 41735 Elm St, #401 Murrieta, CA 92562 Tel 310-694-2082 FAX

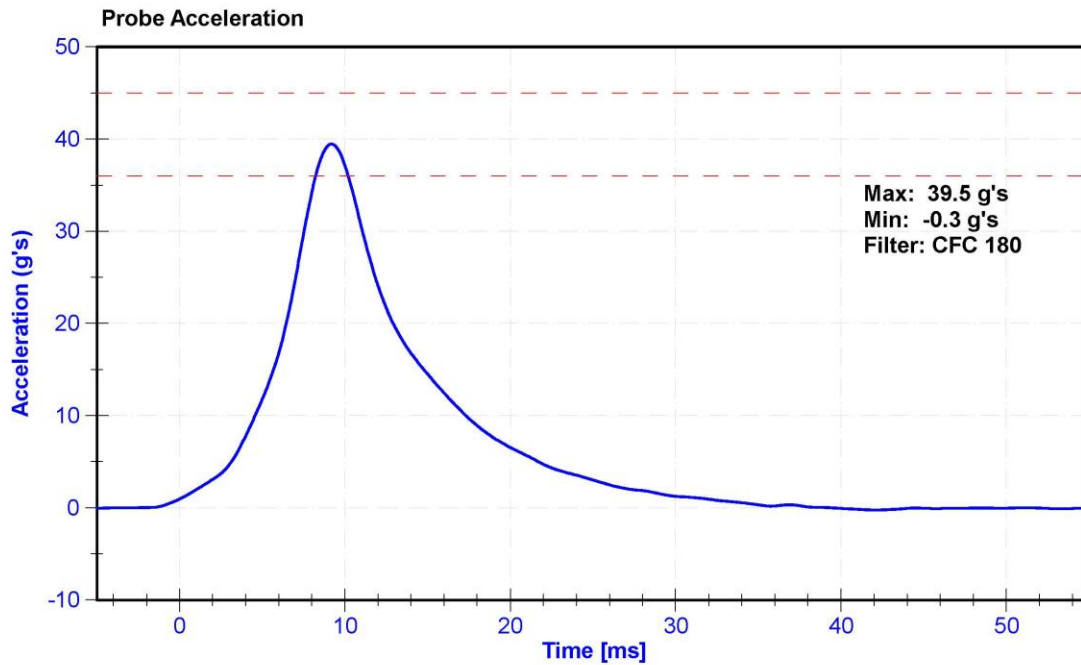
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|-------------------|------|-----------------------|------------|
| ATD Manufacturer | FTSS | Test Technician | K. Brogan |
| ATD Serial Number | 300 | Laboratory Supervisor | D.Reinhard |

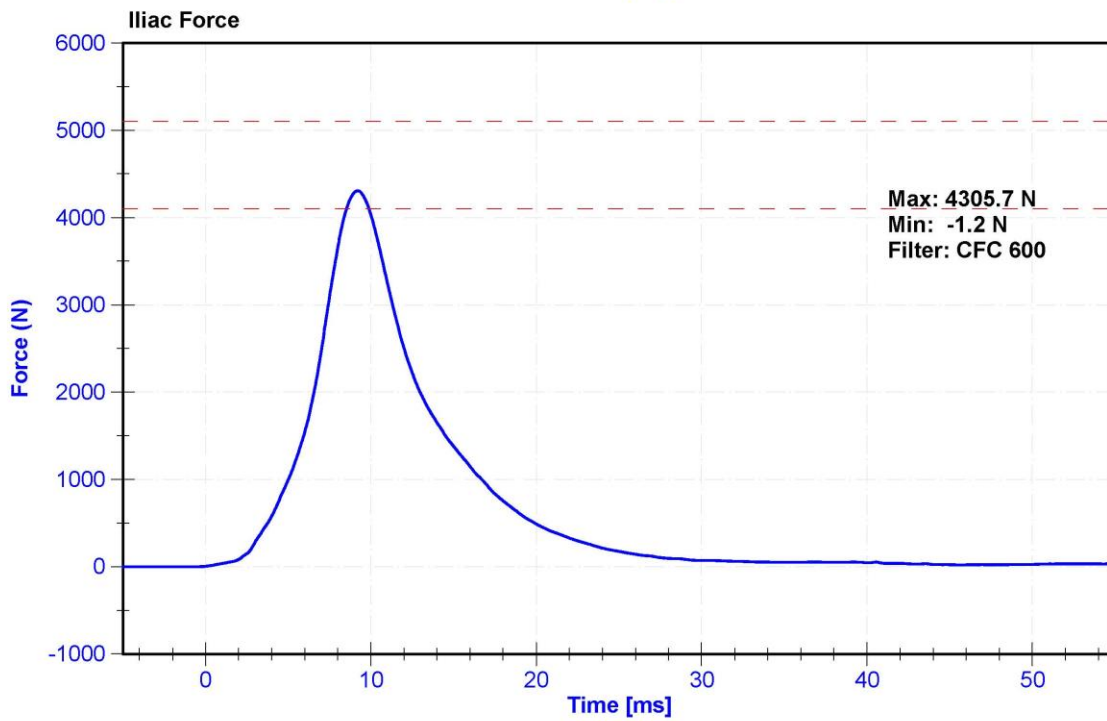
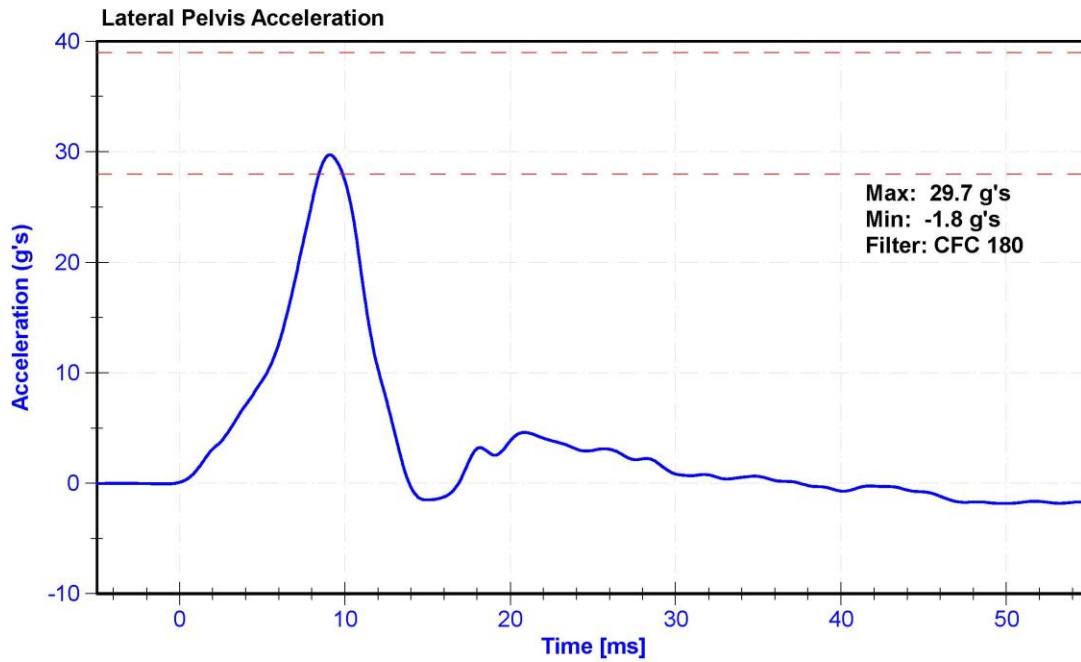
Results

| Test Parameter | Minimum Specification | Maximum Specification | Unit | Result | Pass/Fail |
|-----------------------------|-----------------------|-----------------------|------|--------|-----------|
| Temperature | 20.6 | 22.2 | °C | 20.7 | Pass |
| Humidity | 10 | 70 | % | 27.0 | Pass |
| Velocity | 4.2 | 4.4 | m/s | 4.25 | Pass |
| Probe Acceleration | 36 | 45 | g's | 39.5 | Pass |
| Lateral Pelvis Acceleration | 28 | 39 | g's | 29.7 | Pass |
| Iliac Force | 4100 | 5100 | N | 4305.7 | Pass |

Transducer Calibrations

| Channel | Manufacturer | Serial Number | Calibration Date | Calibration Due Date |
|------------------------|----------------------|---------------|------------------|----------------------|
| Pendulum Accelerometer | MSI 64C-2000 | A286228 | 1/29/2020 | 1/28/2021 |
| Pelvis Y Accelerometer | ENDEVCO 7264C-2K-TZ2 | AC-P51731 | 11/9/2020 | 5/10/2021 |
| Iliac Load Cell | DENTON 3228J | LC-279Fy | 11/23/2020 | 11/23/2021 |





CALIBRATION TEST RESULTS

POST-TEST

SID-IIS 5TH PERCENTILE FEMALE - DRIVER ATD

SERIAL NO: 300

(CONFIGURED FOR LEFT SIDE IMPACT)

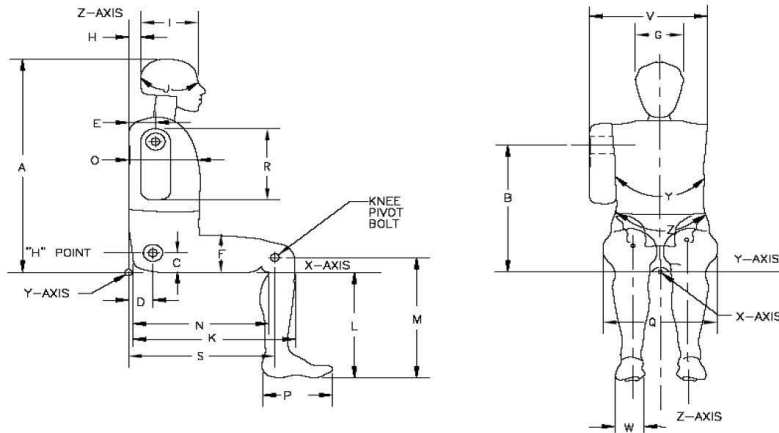


External Measurements - SID-IIs

Technician: K. Dutton

Date: 01/12/2021

Dummy Serial Number: 300



| Symbol | Description | Specification (mm) | | Result (mm) | Pass/Fail |
|--------|------------------------------|--------------------|-----|-------------|-----------|
| A | Sitting Height | 772 | 788 | 781 | Pass |
| B | Shoulder Pivot Height | 437 | 453 | 440 | Pass |
| C | H-point Height | 79 | 89 | 85 | Pass |
| D | H-point from seatback | 141 | 151 | 146 | Pass |
| E | Shoulder Pivot from Backline | 97 | 107 | 102 | Pass |
| F | Thigh Clearance | 119 | 135 | 126 | Pass |
| G | Head Breadth | 140 | 148 | 144 | Pass |
| H | Head Back from Backline | 40 | 46 | 42 | Pass |
| I | Head Depth | 178 | 188 | 187 | Pass |
| J | Head Circumference | 541 | 551 | 544 | Pass |
| K | Buttock to Knee Length | 514 | 540 | 532 | Pass |
| L | Popliteal Height | 343 | 369 | 361 | Pass |
| M | Knee Pivot to floor height | 392 | 409 | 398 | Pass |
| N | Buttock Popliteal Length | 416 | 442 | 430 | Pass |
| O | Chest Depth w/o jacket | 195 | 211 | 208 | Pass |
| P | Foot Length | 216 | 232 | 220 | Pass |
| Q | Hip Breadth (w/pelvic plugs) | 313 | 323 | 317 | Pass |
| R | Arm Length | 249 | 259 | 254 | Pass |
| S | Knee Joint to seatback | 477 | 493 | 484 | Pass |
| V | Shoulder Width | 341 | 357 | 352 | Pass |
| W | Foot Width | 78 | 94 | 83 | Pass |
| Y | Chest Circumference w/jacket | 851 | 881 | 875 | Pass |
| Z | Waist Circumference | 761 | 791 | 773 | Pass |

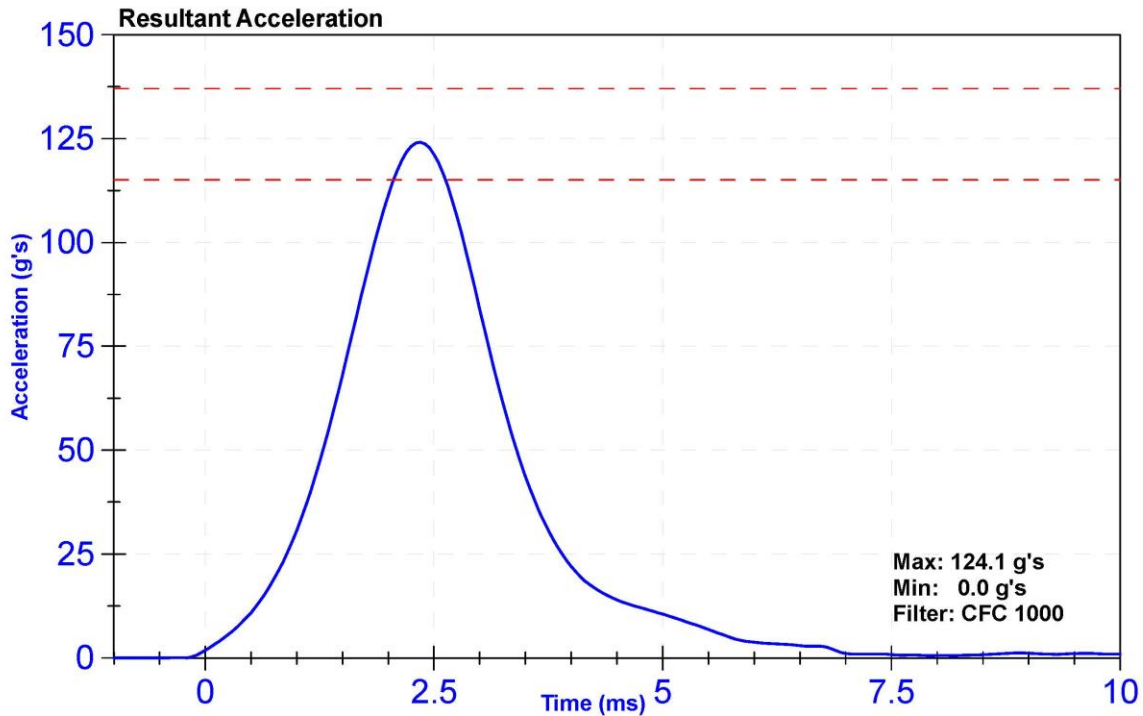
| | | | |
|-------------------|------|-----------------------|-----------|
| ATD Manufacturer | FTSS | Test Technician | K. Dutton |
| ATD Serial Number | 300 | Laboratory Supervisor | K. Brogan |

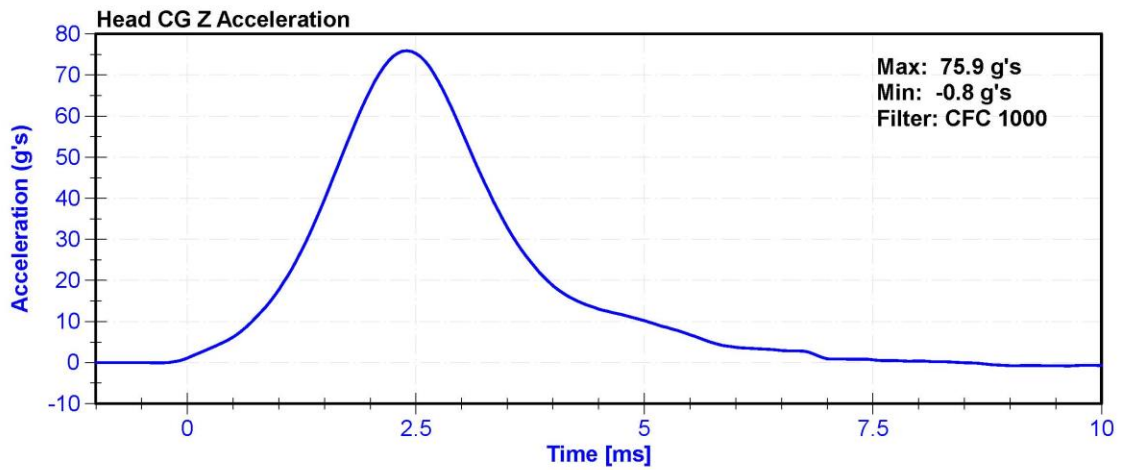
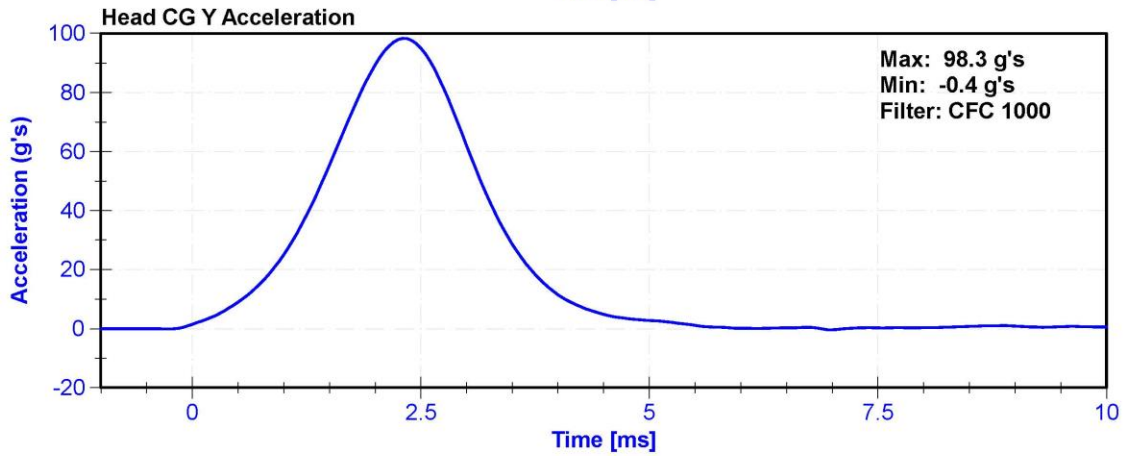
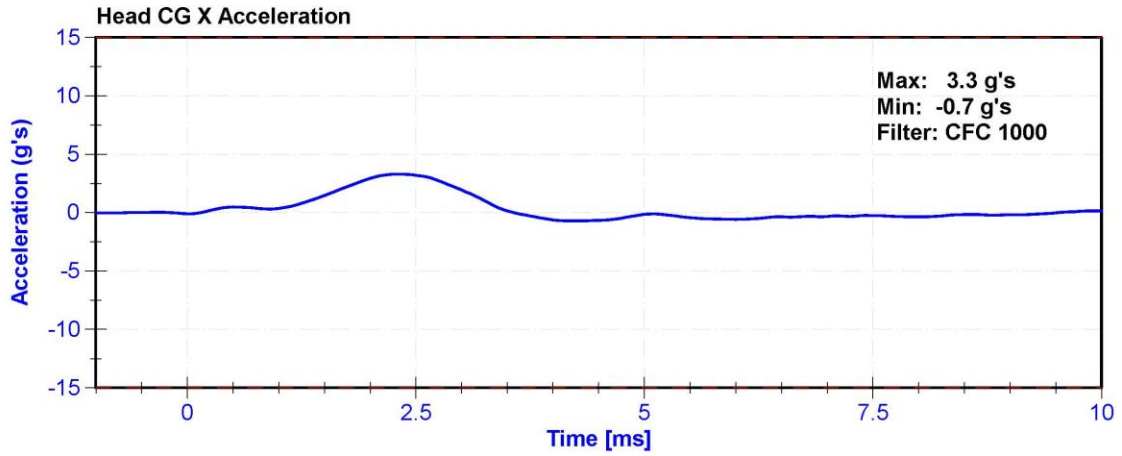
Results

| Test Parameter | Minimum Specification | Maximum Specification | Unit | Result | Pass/Fail |
|------------------------|-----------------------|-----------------------|------|--------|-----------|
| Temperature | 20.6 | 22.2 | °C | 21.5 | Pass |
| Humidity | 10 | 70 | % | 28.4 | Pass |
| Resultant Acceleration | 115 | 137 | g's | 124.1 | Pass |
| Oscillation | 0 | 15 | % | 2.3 | Pass |
| Fore-Aft Acceleration | -15 | 15 | g's | 3.3 | Pass |

Transducer Calibrations

| Channel | Manufacturer | Serial Number | Calibration Date | Calibration Due Date |
|-----------------|----------------|---------------|------------------|----------------------|
| X Accelerometer | ENDEVCO 7264CT | AC-P59018 | 11/10/2020 | 5/11/2021 |
| Y Accelerometer | ENDEVCO 7264 | AC-P79189 | 11/10/2020 | 5/11/2021 |
| Z Accelerometer | ENDEVCO 7264CT | AC-P58777 | 11/10/2020 | 5/11/2021 |





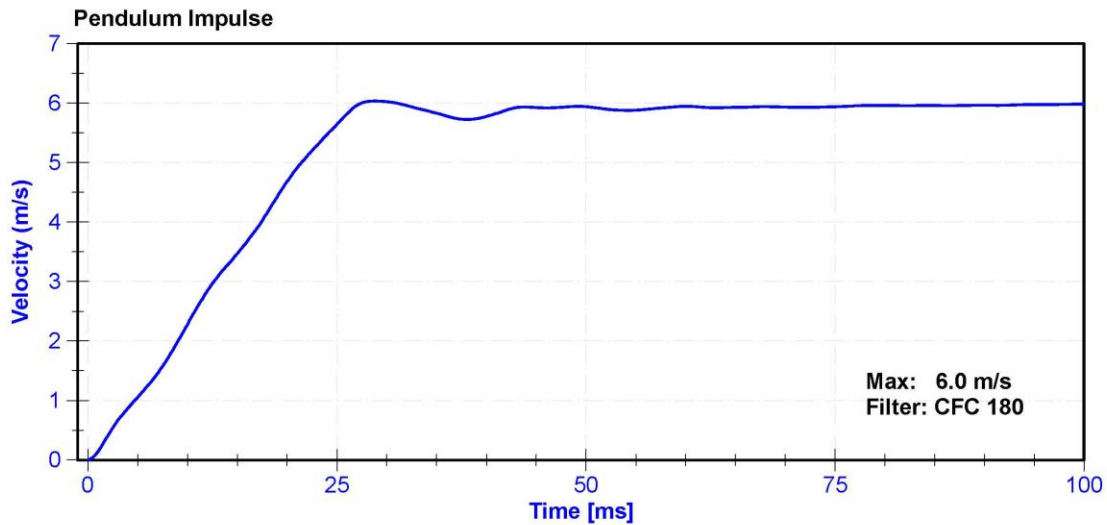
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|-------------------|------|-----------------------|------------|
| ATD Manufacturer | FTSS | Test Technician | C. Mantell |
| ATD Serial Number | 300 | Laboratory Supervisor | K. Brogan |

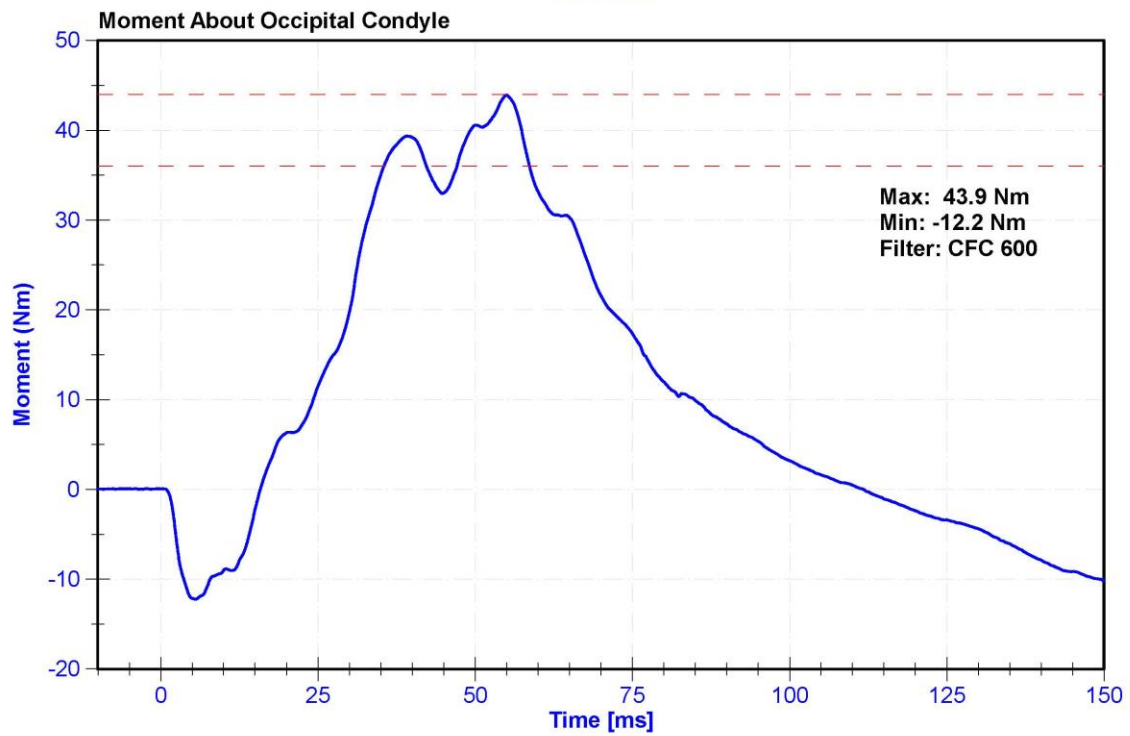
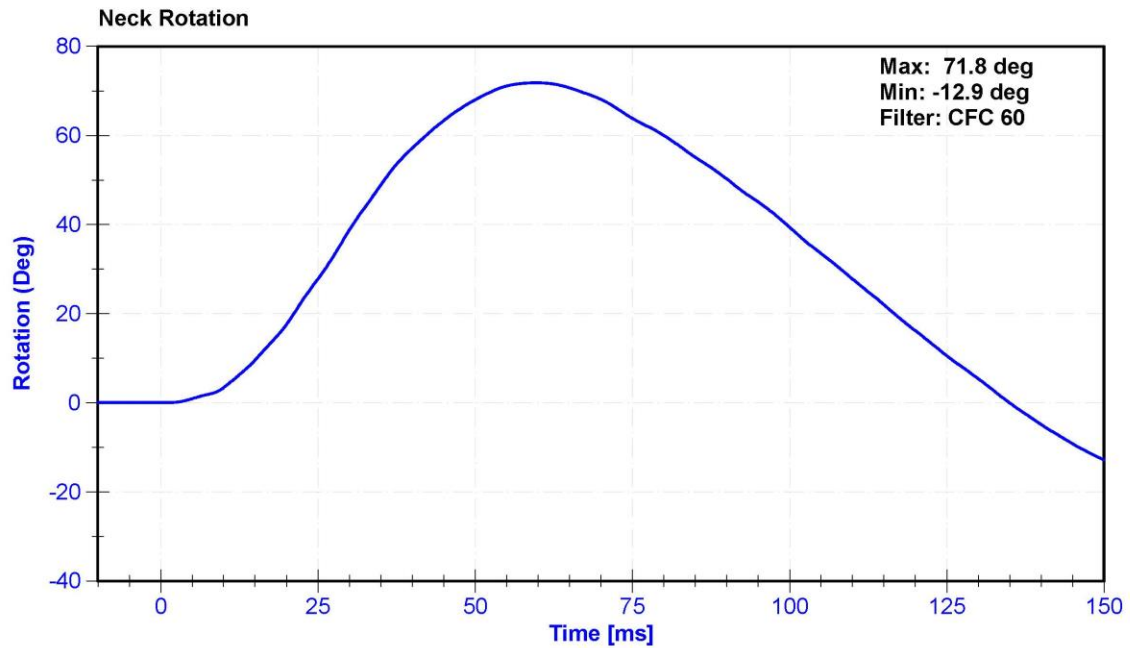
Results

| Test Parameter | Minimum Specification | Maximum Specification | Unit | Result | Pass/Fail |
|-----------------------------------|-----------------------|-----------------------|------|--------|-----------|
| Temperature | 20.6 | 22.2 | °C | 21.7 | Pass |
| Humidity | 10 | 70 | % | 33.9 | Pass |
| Velocity | 5.51 | 5.63 | m/s | 5.584 | Pass |
| Pendulum Impulse at 10ms | 2.2 | 2.8 | m/s | 2.28 | Pass |
| Pendulum Impulse at 15ms | 3.3 | 4.1 | m/s | 3.47 | Pass |
| Pendulum Impulse at 20ms | 4.4 | 5.4 | m/s | 4.68 | Pass |
| Pendulum Impulse at 25ms | 5.4 | 6.1 | m/s | 5.64 | Pass |
| Pendulum Impulse from 25 to 100ms | 5.5 | 6.2 | m/s | 6.03 | Pass |
| Neck Rotation | 71 | 81 | deg | 71.8 | Pass |
| Time at Maximum Rotation | 50 | 70 | ms | 59.6 | Pass |
| Moment about the OC | 36 | 44 | Nm | 43.9 | Pass |
| Moment Decay to 0 Nm | 102 | 126 | ms | 111.8 | Pass |

Transducer Calibrations

| Channel | Manufacturer | Serial Number | Calibration Date | Calibration Due Date |
|------------------------|------------------|-------------------|------------------|----------------------|
| Pendulum Accelerometer | ENDEVCO 7231CT | AC-C16503 Striker | 2/6/2020 | 2/5/2021 |
| Pendulum Potentiometer | Denton 78051-342 | DS-184Pend | 11/6/2020 | 11/6/2021 |
| Condyle Potentiometer | Denton 78051-342 | DS-185Pend | 11/6/2020 | 11/6/2021 |
| Upper Neck Load Cell | Denton 1716 | 17162019 FY | 3/18/2020 | 3/18/2021 |





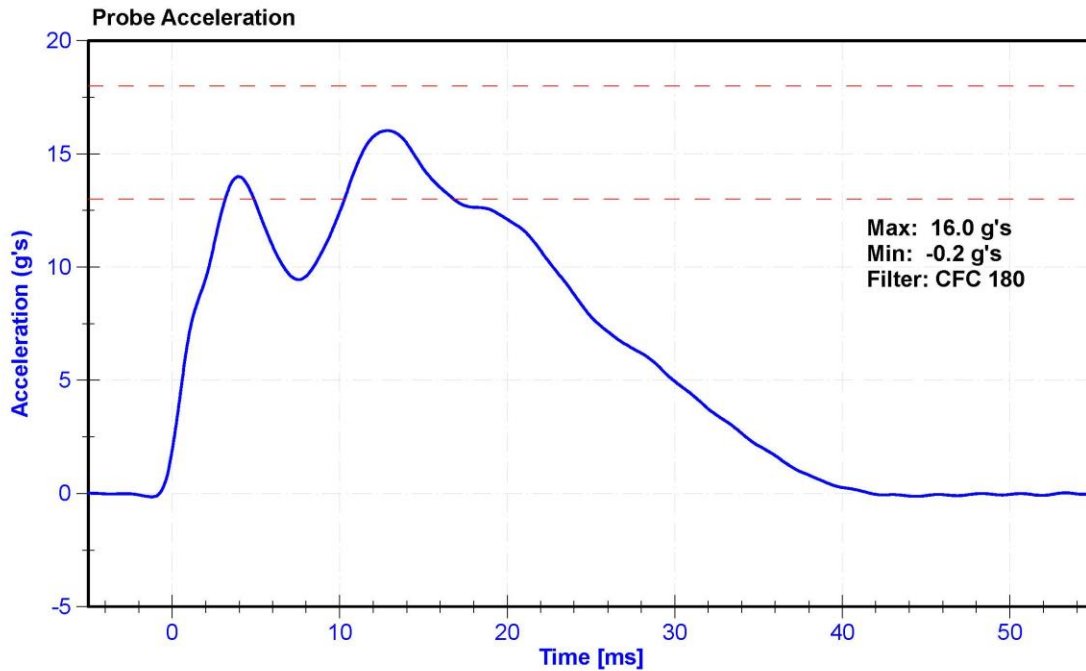
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|-------------------|------|-----------------------|------------|
| ATD Manufacturer | FTSS | Test Technician | S. Vacanti |
| ATD Serial Number | 300 | Laboratory Supervisor | K. Brogan |

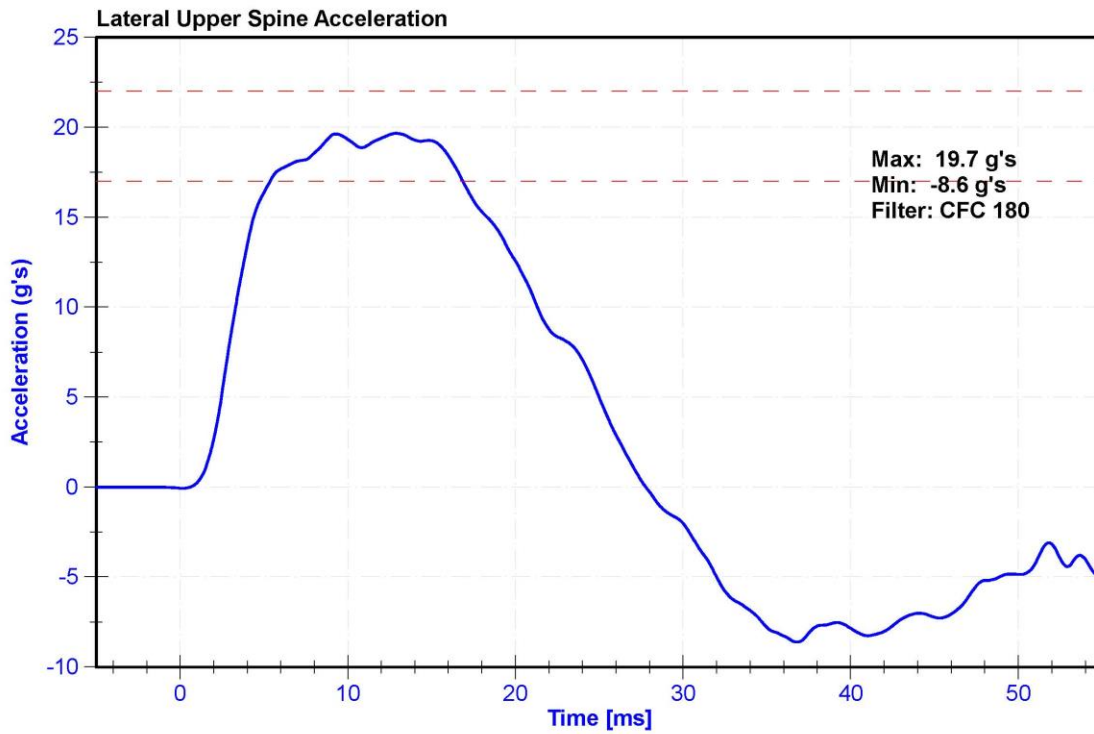
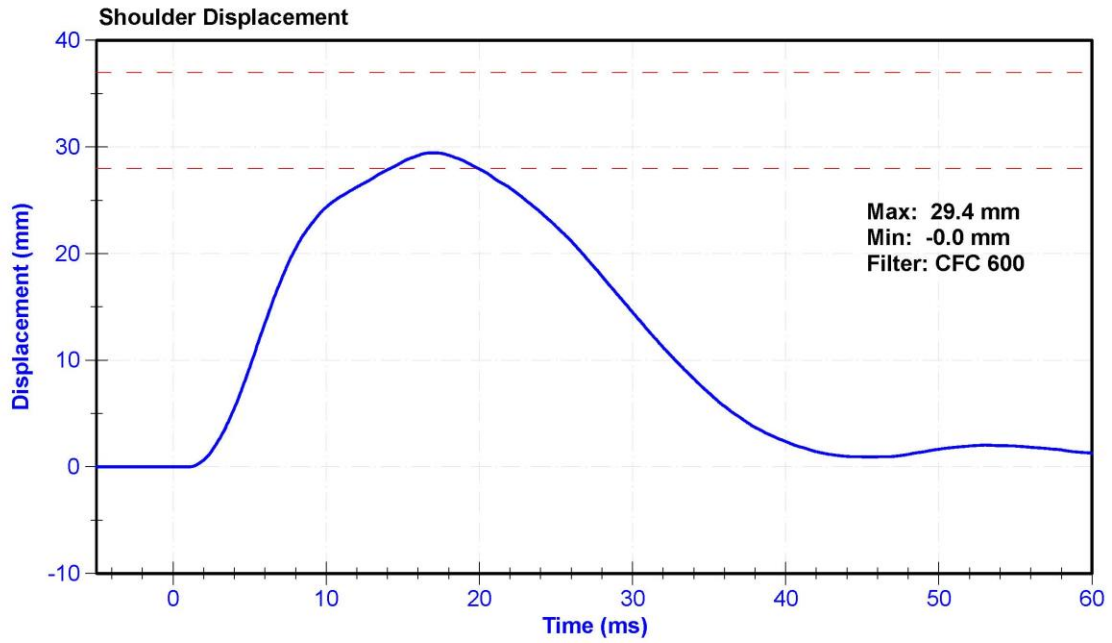
Results

| Test Parameter | Minimum Specification | Maximum Specification | Unit | Result | Pass/Fail |
|----------------------------------|-----------------------|-----------------------|------|--------|-----------|
| Temperature | 20.6 | 22.2 | °C | 21 | Pass |
| Humidity | 10 | 70 | % | 29 | Pass |
| Velocity | 4.2 | 4.4 | m/s | 4.31 | Pass |
| Probe Acceleration | 13 | 18 | g's | 16.0 | Pass |
| Shoulder Deflection | 28 | 37 | mm | 29.4 | Pass |
| Lateral Upper Spine Acceleration | 17 | 22 | g's | 19.7 | Pass |

Transducer Calibrations

| Channel | Manufacturer | Serial Number | Calibration Date | Calibration Due Date |
|-----------------------------|------------------|---------------|------------------|----------------------|
| Pendulum Accelerometer | MSI 64C-2000 | A286228 | 1/29/2020 | 1/28/2021 |
| Shoulder Potentiometer | Servo 08CT1-3725 | DS-053 GFE | 11/10/2020 | 5/11/2021 |
| Upper Spine Y Accelerometer | ENDEVCO 7264CT | AC-P71281 | 11/9/2020 | 5/10/2021 |





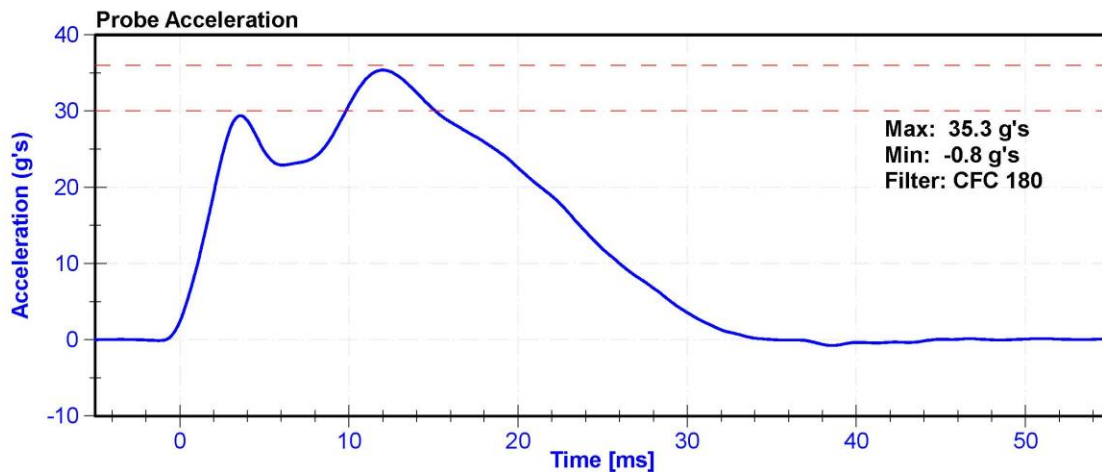
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|-------------------|------|-----------------------|------------|
| ATD Manufacturer | FTSS | Test Technician | S. Vacanti |
| ATD Serial Number | 300 | Laboratory Supervisor | K. Brogan |

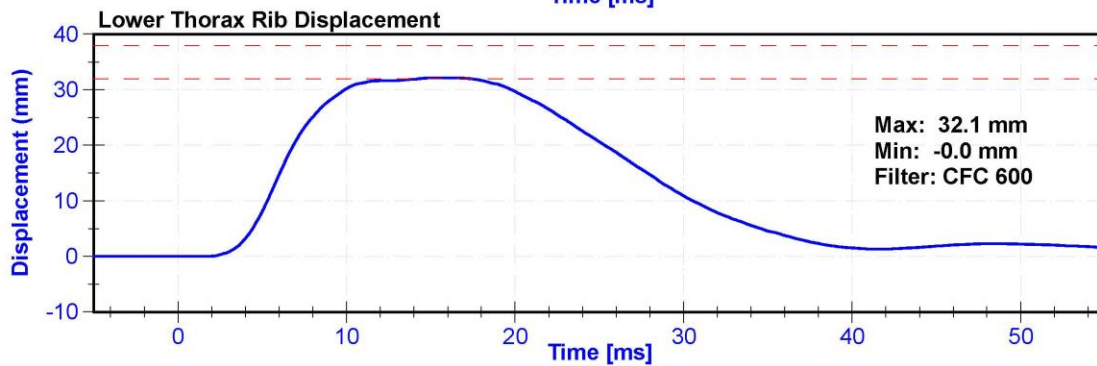
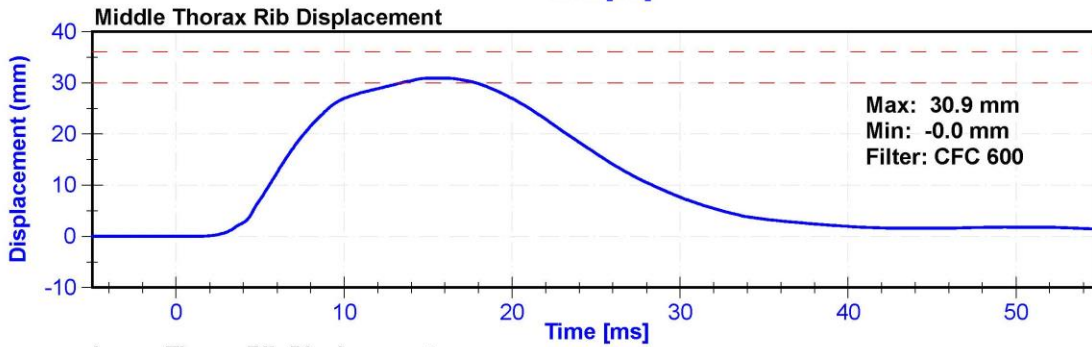
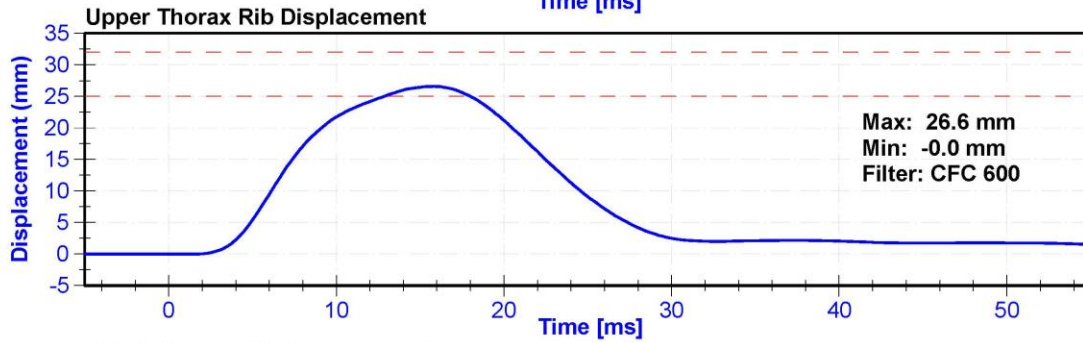
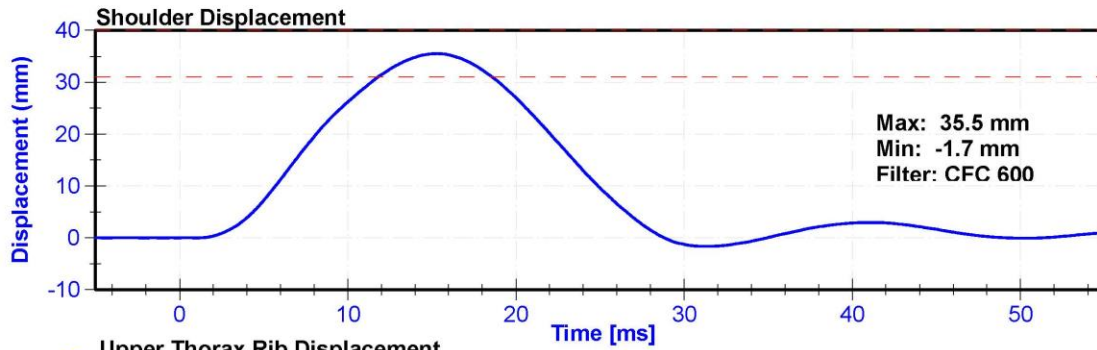
Results

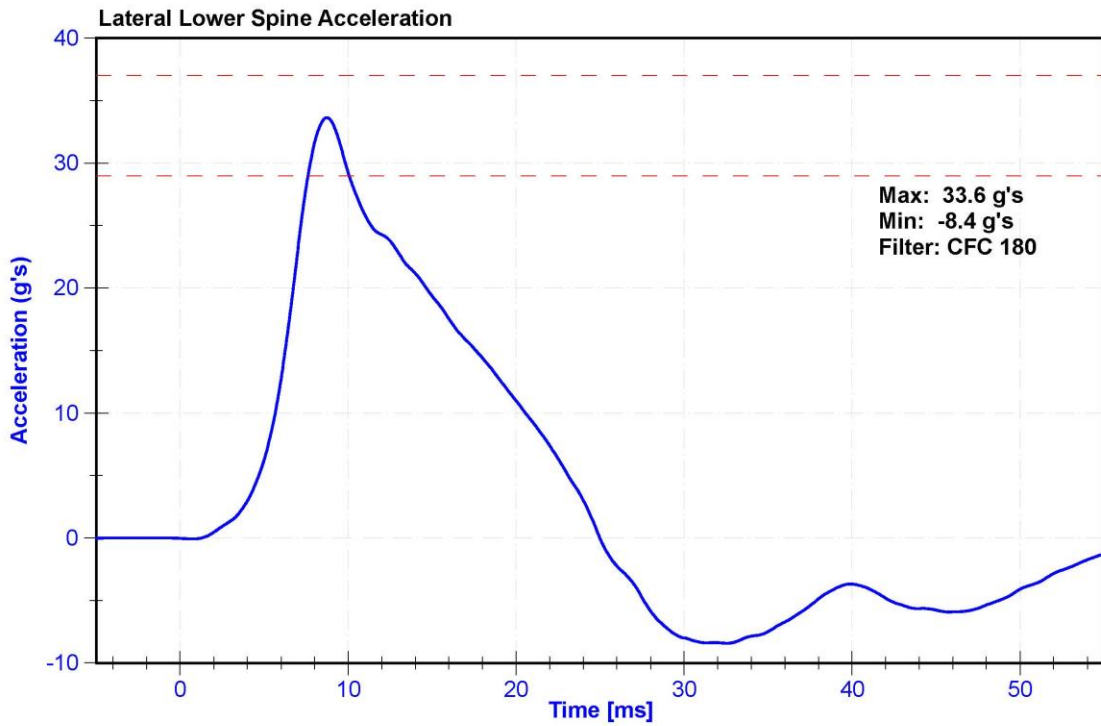
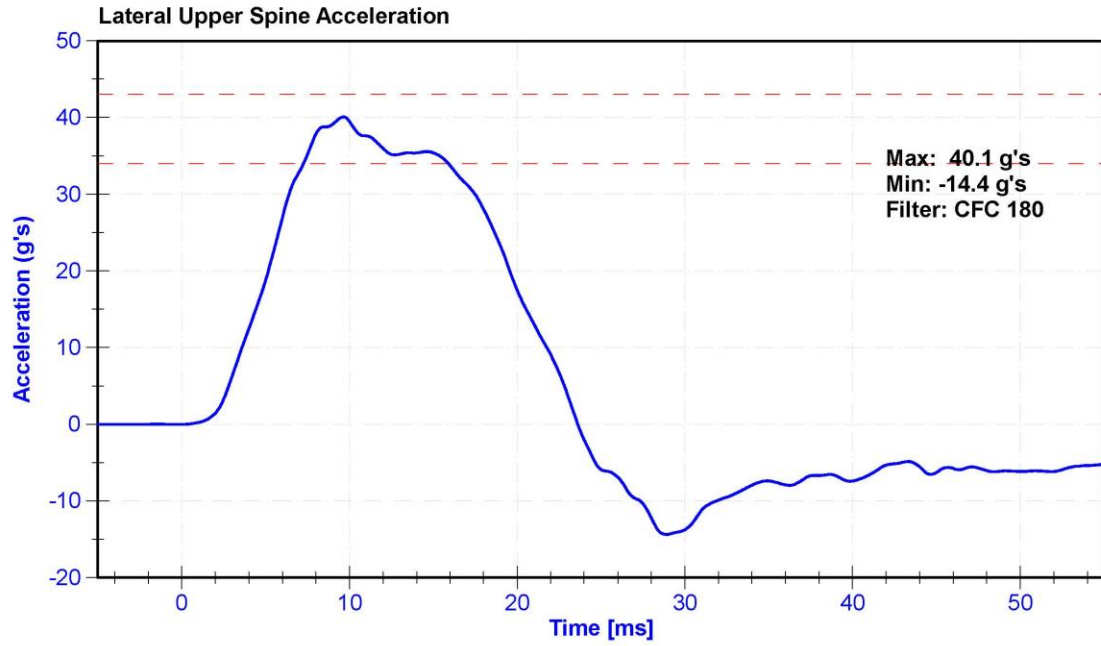
| Test Parameter | Minimum Specification | Maximum Specification | Unit | Result | Pass/Fail |
|----------------------------------|-----------------------|-----------------------|------|--------|-----------|
| Temperature | 20.6 | 22.2 | °C | 20.9 | Pass |
| Humidity | 10 | 70 | % | 29.0 | Pass |
| Velocity | 6.6 | 6.8 | m/s | 6.74 | Pass |
| Probe Acceleration after 5 ms | 30 | 36 | g's | 35.3 | Pass |
| Lateral Upper Spine Acceleration | 34 | 43 | g's | 40.1 | Pass |
| Lateral Lower Spine Acceleration | 29 | 37 | g's | 33.6 | Pass |
| Shoulder Deflection | 31 | 40 | mm | 35.5 | Pass |
| Upper Thorax Rib Deflection | 25 | 32 | mm | 26.6 | Pass |
| Mid Thorax Rib Deflection | 30 | 36 | mm | 30.9 | Pass |
| Lower Thorax Rib Deflection | 32 | 38 | mm | 32.1 | Pass |

Transducer Calibrations

| Channel | Manufacturer | Serial Number | Calibration Date | Calibration Due Date |
|---------------------------------|------------------|---------------|------------------|----------------------|
| Pendulum Accelerometer | MSI 64C-2000 | A286228 | 1/29/2020 | 1/28/2021 |
| Upper Spine T1 Y Accelerometer | ENDEVCO 7264CT | AC-P71281 | 11/9/2020 | 5/10/2021 |
| Upper Spine T12 Y Accelerometer | ENDEVCO 7264 | AC-P64147 | 11/9/2020 | 5/10/2021 |
| Shoulder Potentiometer | Servo 08CT1-3725 | DS-053 GFE | 11/10/2020 | 5/11/2021 |
| Upper Thorax Rib Potentiometer | Servo 08CT1-3725 | DS-451GFE | 11/10/2020 | 5/11/2021 |
| Middle Thorax Rib Potentiometer | Servo 08TC1-3745 | DS-040GFE | 11/10/2020 | 5/11/2021 |
| Lower Thorax Rib Potentiometer | Servo 08TC1-3725 | DS-1156GFE | 11/9/2020 | 5/10/2021 |







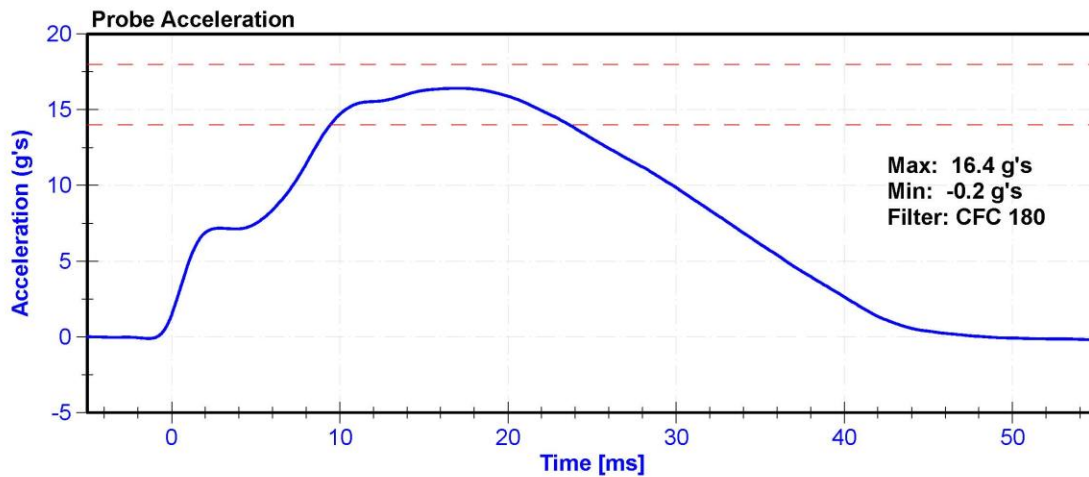
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|-------------------|------|-----------------------|------------|
| ATD Manufacturer | FTSS | Test Technician | S. Vacanti |
| ATD Serial Number | 300 | Laboratory Supervisor | K. Brogan |

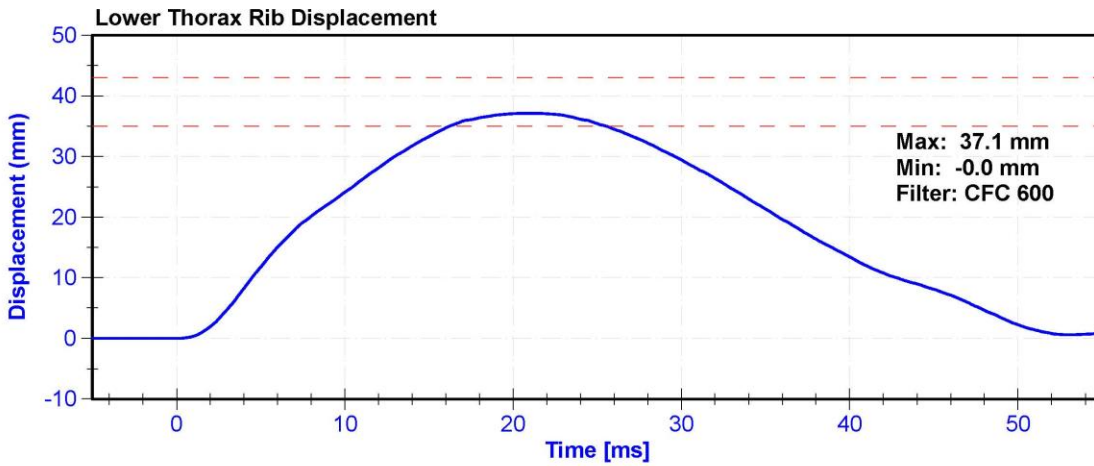
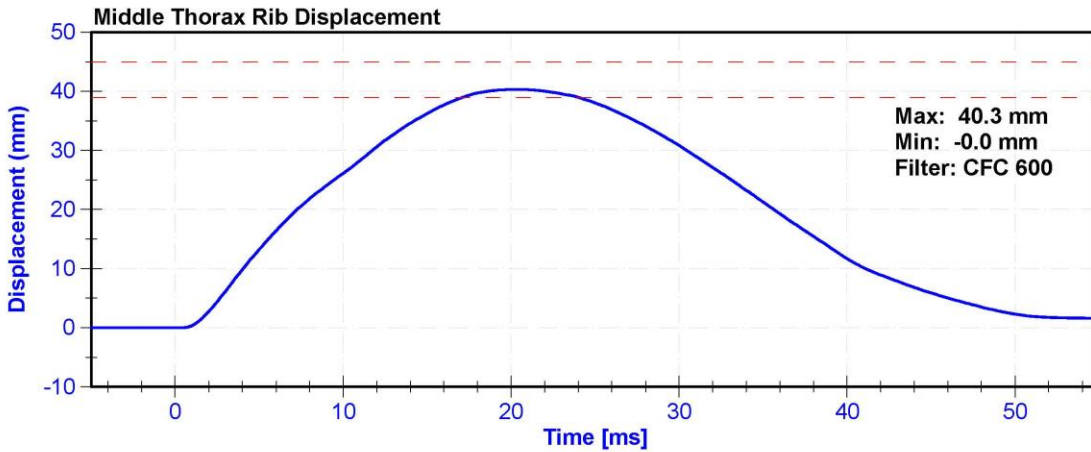
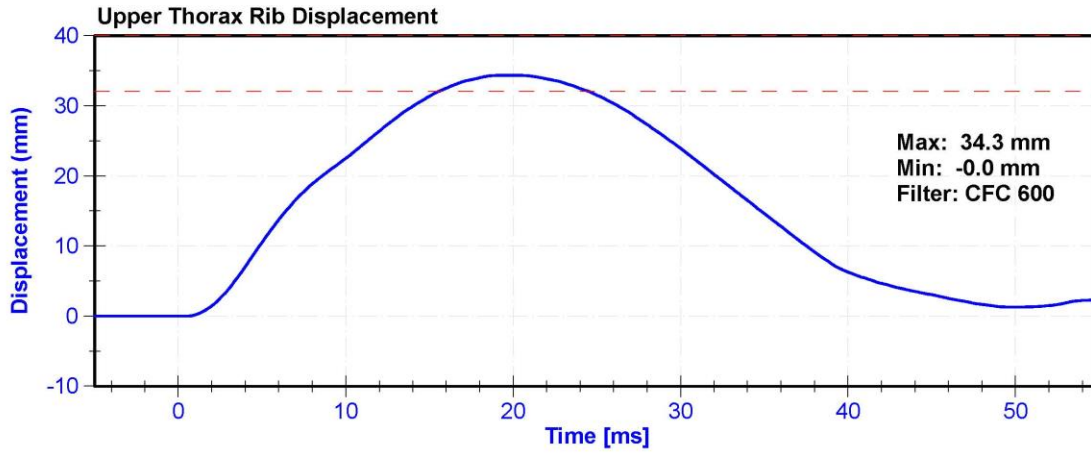
Results

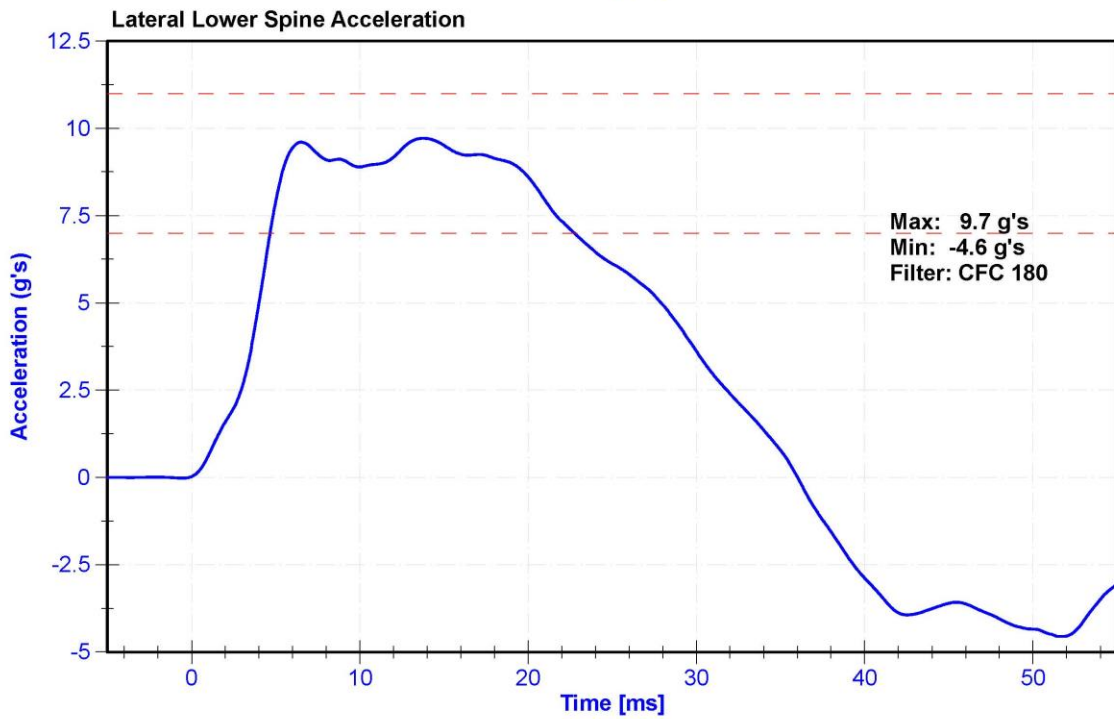
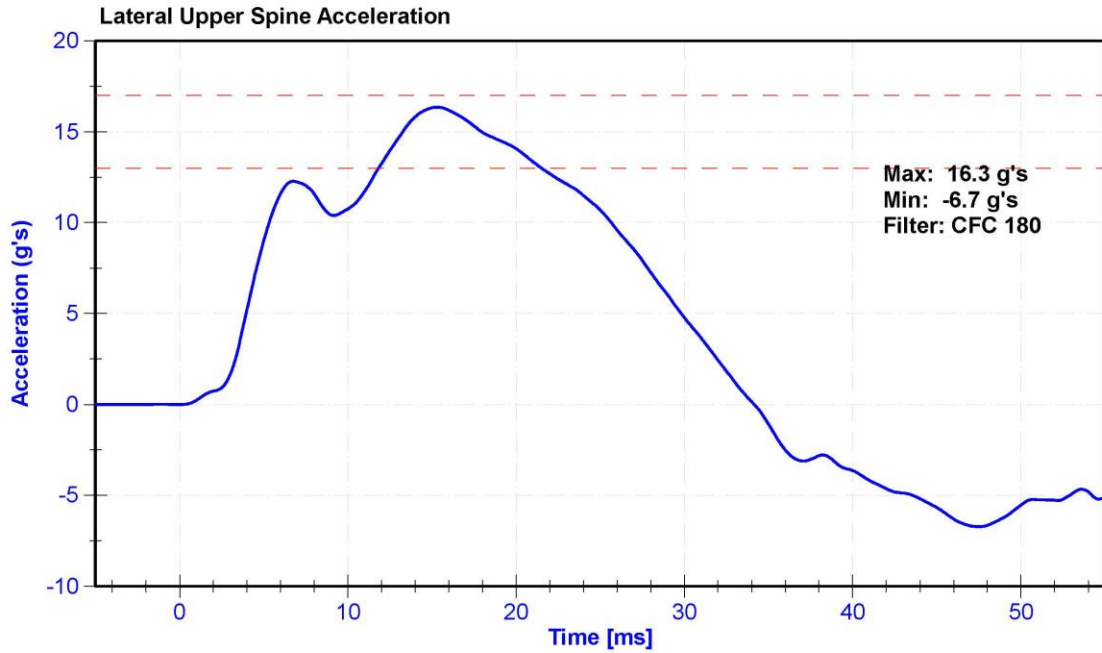
| Test Parameter | Minimum Specification | Maximum Specification | Unit | Result | Pass/Fail |
|----------------------------------|-----------------------|-----------------------|------|--------|-----------|
| Temperature | 20.6 | 22.2 | °C | 20.9 | Pass |
| Humidity | 10 | 70 | % | 29 | Pass |
| Velocity | 4.2 | 4.4 | m/s | 4.37 | Pass |
| Probe Acceleration | 14 | 18 | g's | 16.4 | Pass |
| Lateral Upper Spine Acceleration | 13 | 17 | g's | 16.3 | Pass |
| Lateral Lower Spine Acceleration | 7 | 11 | g's | 9.7 | Pass |
| Upper Thorax Rib Deflection | 32 | 40 | mm | 34.3 | Pass |
| Middle Thorax Rib Deflection | 39 | 45 | mm | 40.3 | Pass |
| Lower Thorax Rib Deflection | 35 | 43 | mm | 37.1 | Pass |

Transducer Calibrations

| Channel | Manufacturer | Serial Number | Calibration Date | Calibration Due Date |
|---------------------------------|------------------|---------------|------------------|----------------------|
| Pendulum Accelerometer | MSI 64C-2000 | A286228 | 1/29/2020 | 1/28/2021 |
| Upper Spine Y Accelerometer | ENDEVCO 7264CT | AC-P71281 | 11/9/2020 | 5/10/2021 |
| Lower Spine Y Accelerometer | ENDEVCO 7264 | AC-P64147 | 11/9/2020 | 5/10/2021 |
| Upper Thorax Rib Potentiometer | Servo 08CT1-3725 | DS-451GFE | 11/10/2020 | 5/11/2021 |
| Middle Thorax Rib Potentiometer | Servo 08TC1-3745 | DS-040GFE | 11/10/2020 | 5/11/2021 |
| Lower Thorax Rib Potentiometer | Servo 08TC1-3725 | DS-1156GFE | 11/9/2020 | 5/10/2021 |







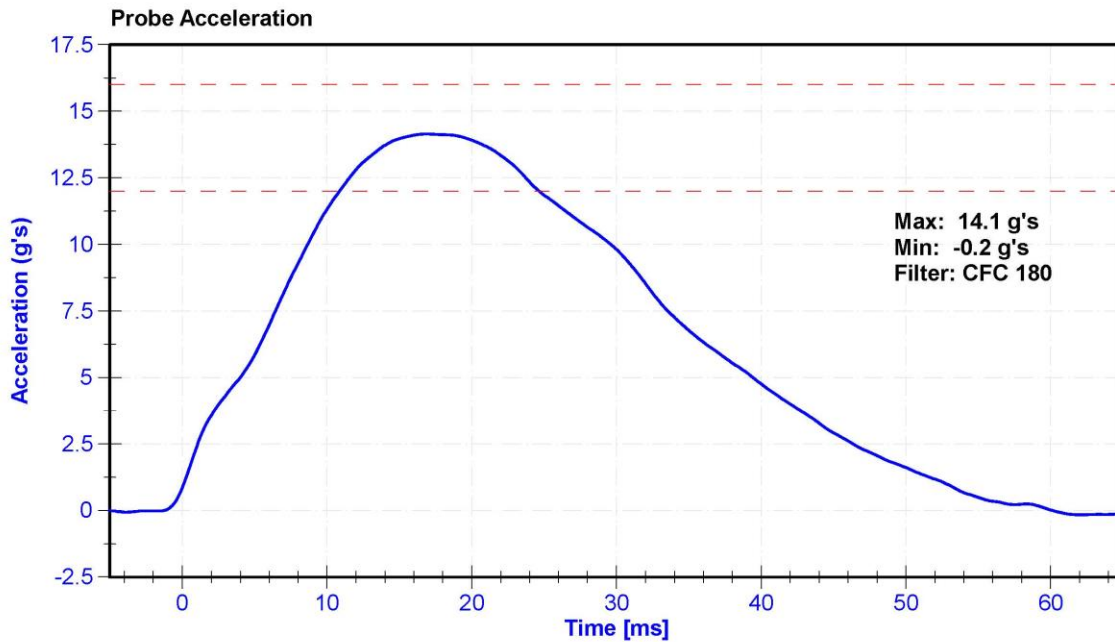
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|-------------------|------|-----------------------|------------|
| ATD Manufacturer | FTSS | Test Technician | S. Vacanti |
| ATD Serial Number | 300 | Laboratory Supervisor | K. Brogan |

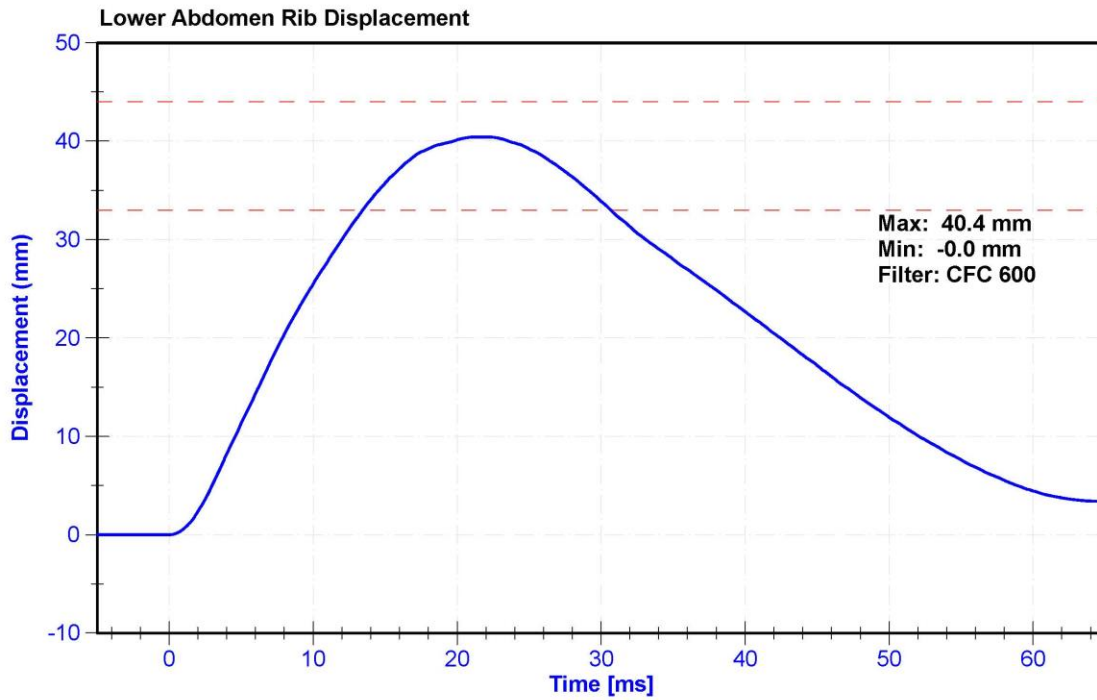
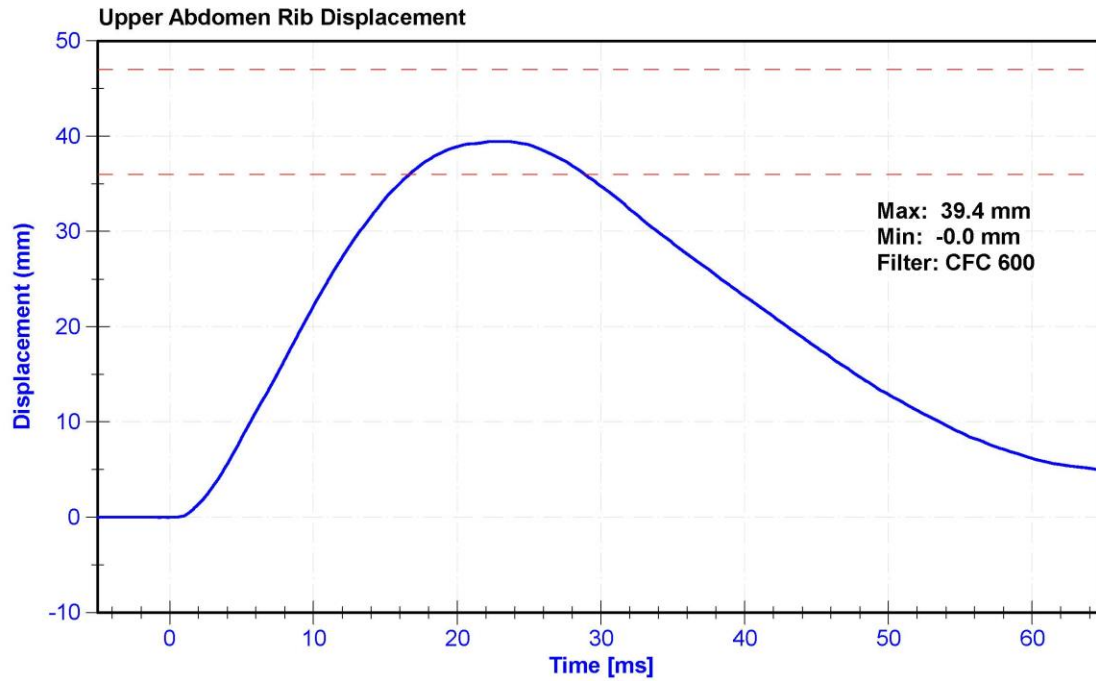
Results

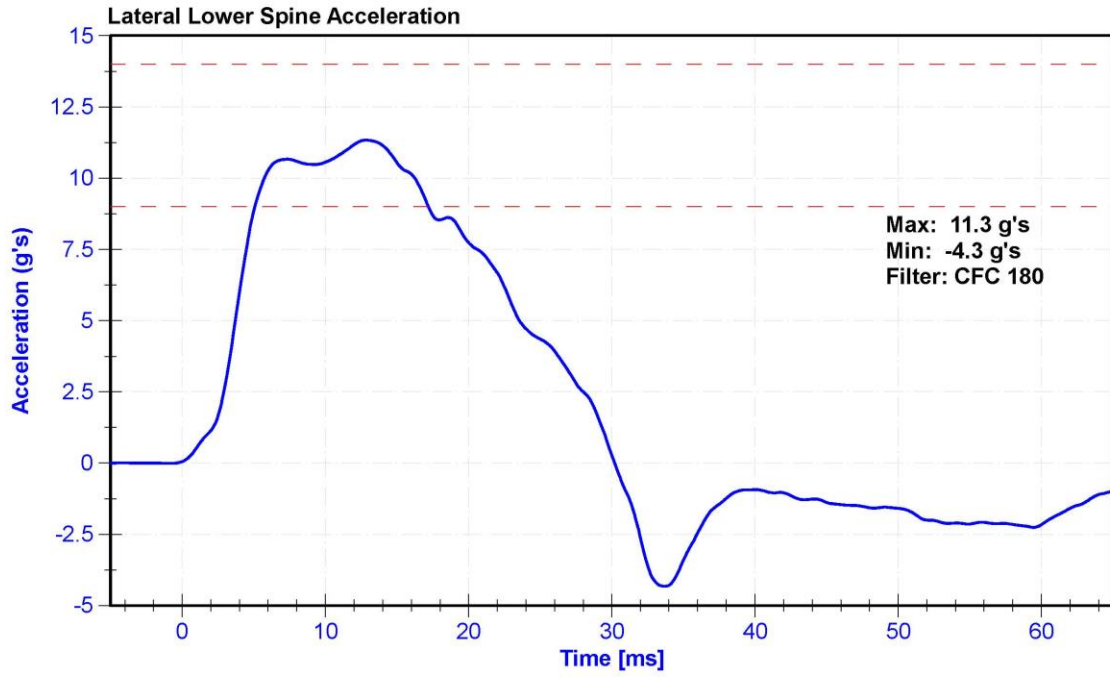
| Test Parameter | Minimum Specification | Maximum Specification | Unit | Result | Pass/Fail |
|----------------------------------|-----------------------|-----------------------|------|--------|-----------|
| Temperature | 20.6 | 22.2 | °C | 20.9 | Pass |
| Humidity | 10 | 70 | % | 29.0 | Pass |
| Velocity | 4.2 | 4.4 | m/s | 4.32 | Pass |
| Probe Acceleration | 12 | 16 | g's | 14.1 | Pass |
| Lateral Lower Spine Acceleration | 9 | 14 | g's | 11.3 | Pass |
| Upper Abdomen Rib Deflection | 36 | 47 | mm | 39.4 | Pass |
| Lower Abdomen Rib Deflection | 33 | 44 | mm | 40.4 | Pass |

Transducer Calibrations

| Channel | Manufacturer | Serial Number | Calibration Date | Calibration Due Date |
|---------------------------------|------------------|---------------|------------------|----------------------|
| Probe Accelerometer | MSI 64C-2000 | A286228 | 1/29/2020 | 1/28/2021 |
| Lower Spine Y Accelerometer | ENDEVCO 7264 | AC-P64147 | 11/9/2020 | 5/10/2021 |
| Upper Abdomen Rib Potentiometer | Servo 08CT1-3725 | DS-308GFE | 11/10/2020 | 5/11/2021 |
| Lower Abdomen Rib Potentiometer | Servo 08CT1-3725 | DS-307GFE | 11/10/2020 | 5/11/2021 |







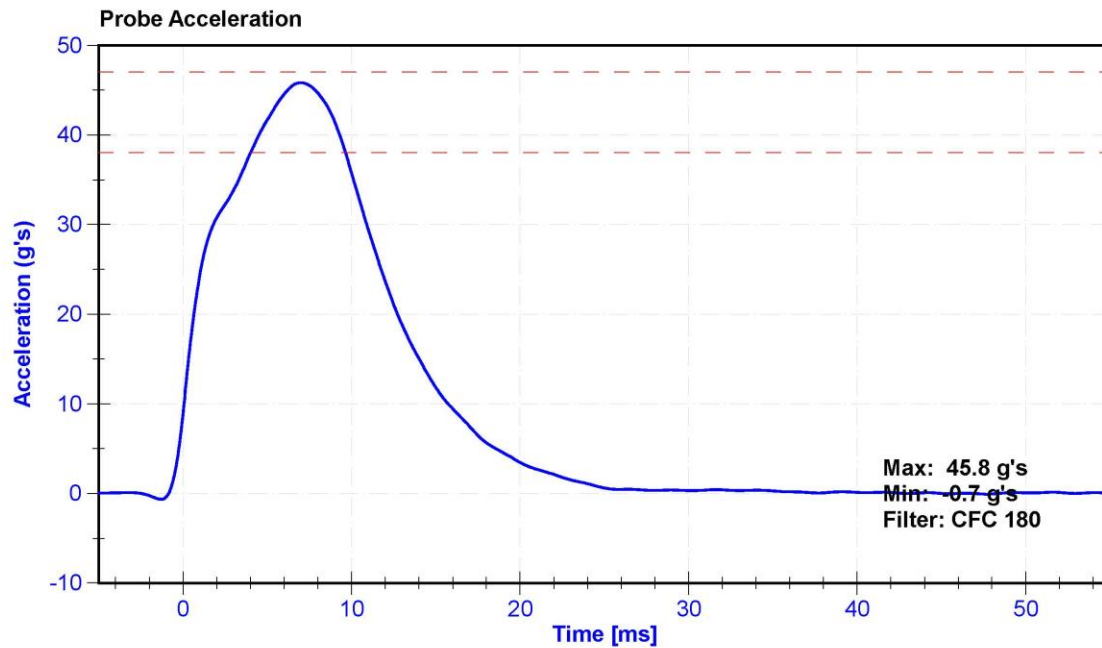
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|-------------------|------|-----------------------|------------|
| ATD Manufacturer | FTSS | Test Technician | S. Vacanti |
| ATD Serial Number | 300 | Laboratory Supervisor | K. Brogan |

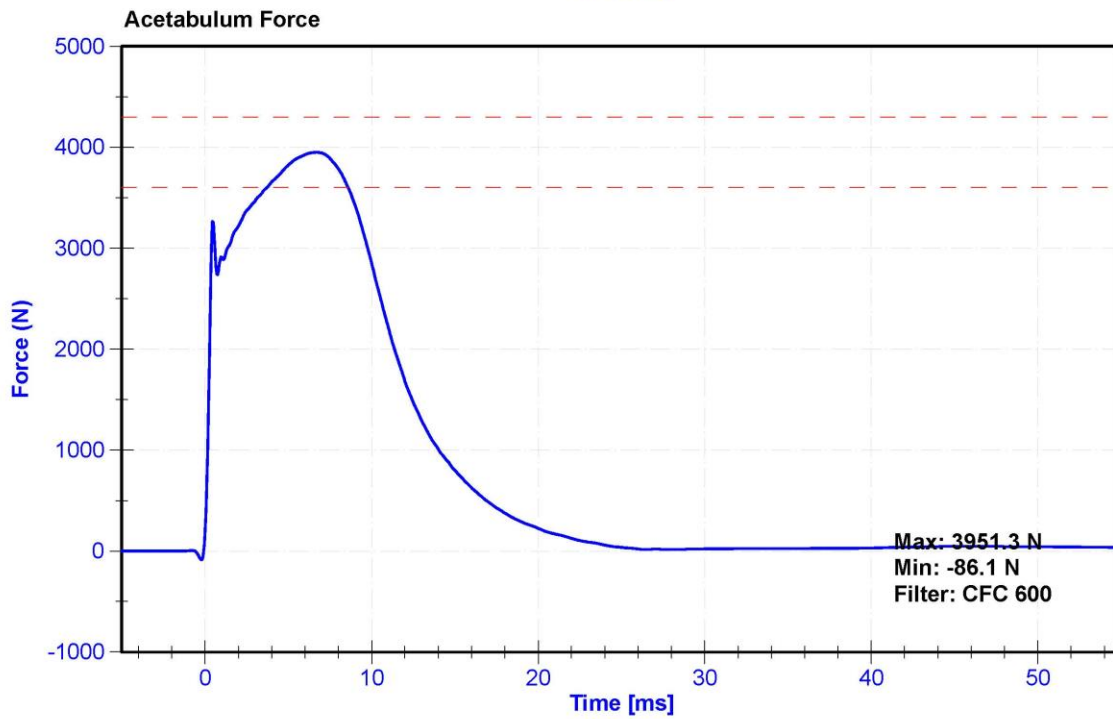
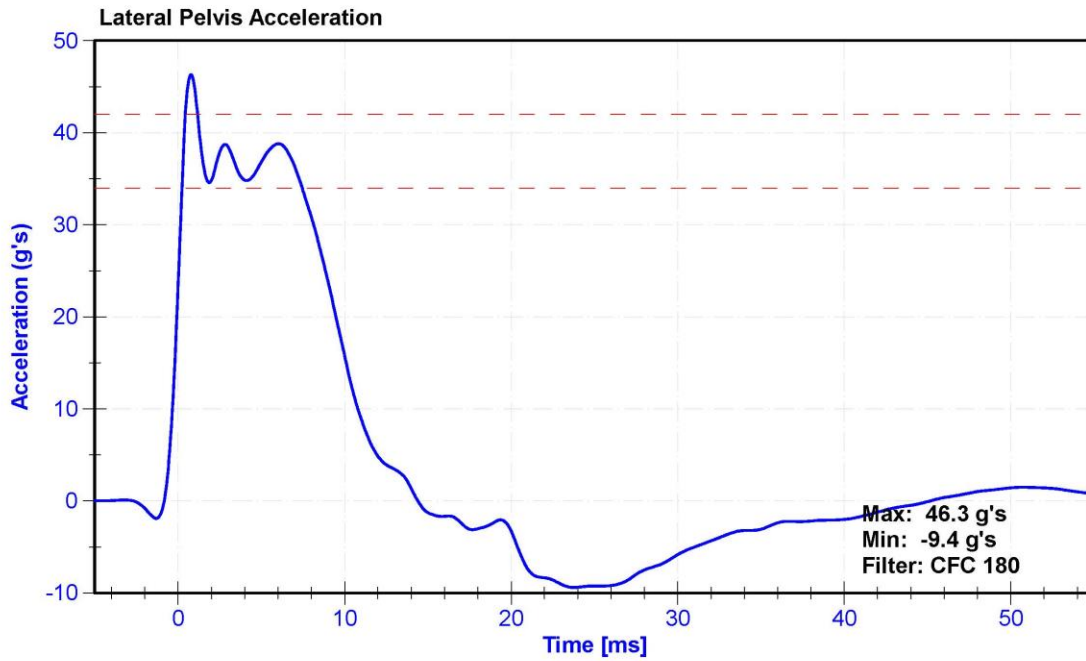
Results

| Test Parameter | Minimum Specification | Maximum Specification | Unit | Result | Pass/Fail |
|---------------------------------------|-----------------------|-----------------------|------|--------|-----------|
| Temperature | 20.6 | 22.2 | °C | 20.9 | Pass |
| Humidity | 10 | 70 | % | 29 | Pass |
| Velocity | 6.6 | 6.8 | m/s | 6.68 | Pass |
| Probe Acceleration | 38 | 47 | g's | 45.8 | Pass |
| Lateral Pelvis Acceleration after 6ms | 34 | 42 | g's | 38.8 | Pass |
| Acetabulum Force | 3600 | 4300 | N | 3951.3 | Pass |

Transducer Calibrations

| Channel | Manufacturer | Serial Number | Calibration Date | Calibration Due Date |
|------------------------|---------------|---------------|------------------|----------------------|
| Pendulum Accelerometer | MSI 64C-2000 | A286228 | 1/29/2020 | 1/28/2021 |
| Pelvis Y Accelerometer | ENDEVCO 7264C | AC-P51731 | 11/9/2020 | 5/10/2021 |
| Acetabulum Load Cell | Denton IF-520 | LC-236Fy | 3/18/2020 | 3/18/2021 |
| Certification Plug | SACO | 13447 | 9/20/2019 | N/A |
| Crash Test Plug | SACO | 13421 | 9/20/2019 | N/A |







Crash Plug
1/12/2021 SN
CAL4506

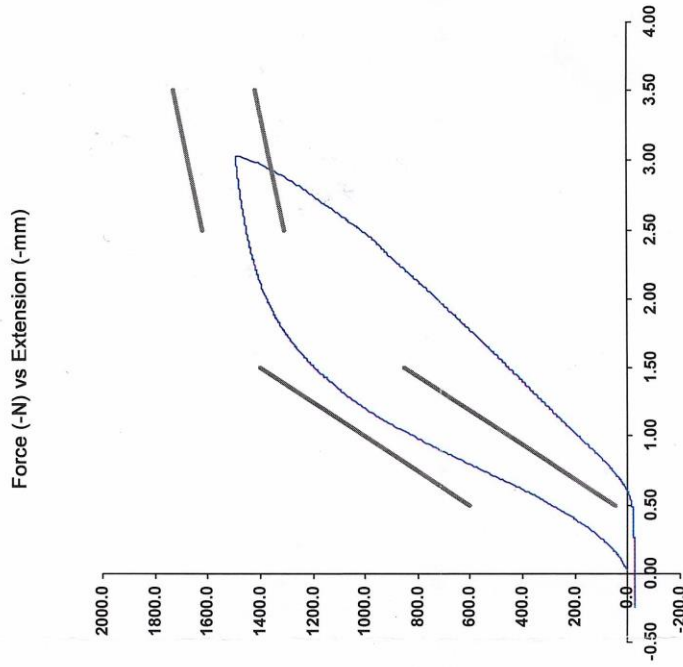
SID-IIs Pelvis Plug Certification Test

Plug S/N 13421
Test Number 11063
Report Number 11101
Test Date 9/20/2019 7:33:47 AM

| Test Results | Spec Min | Spec Max |
|--------------------|----------|----------|
| Force @ 0.5 mm (N) | 50.00 | 600.00 |
| Force @ 1.5 mm (N) | 850.00 | 1,400.00 |
| Force @ 2.5 mm (N) | 1,306.00 | 1,618.00 |
| Force @ 3.0 mm (N) | 1,361.00 | 1,673.00 |

Testing Machine STM-20 5965542
Load Cell S/N (F1360947), Units (LBS) 1000
Crosshead Speed (mm / min) or Rate 12.7
Extension or Position Measured by XHD_100 (XHD100)

Notes:



Operator _____
Part Number 180-4450

Template No 107 20-Sep-19
SACO Research

By: *DC* Date: 9/20/2019
SACO Research 41735 Elm St, #401 Murrieta, CA 92562 Tel 310-694-2082 FAX



300 Cert 1
1/12/2021
8V

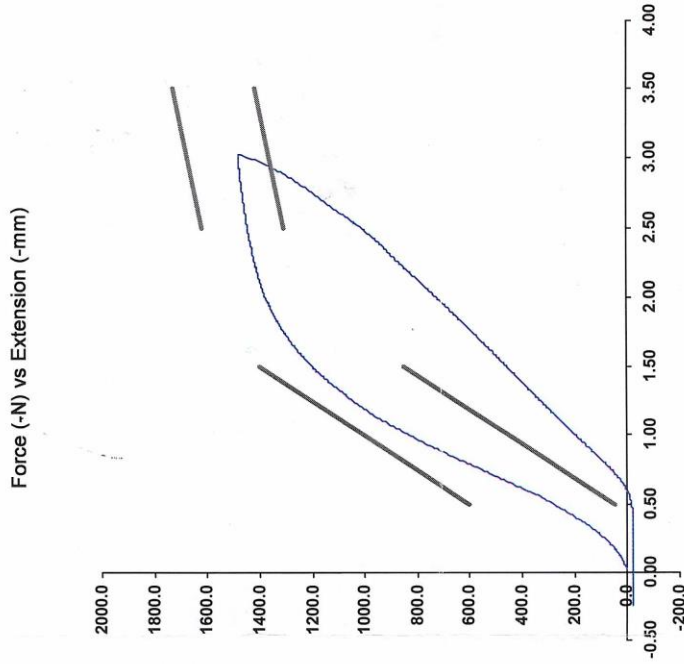
SID-IIs Pelvis Plug Certification Test

Plug S/N 13447
Test Number 11090
Report Number 11128
Test Date 9/20/2019 8:48:08 AM

| Test Results | Spec Min | Spec Max |
|--------------------|----------|----------|
| Force @ 0.5 mm (N) | 50.00 | 600.00 |
| Force @ 1.5 mm (N) | 850.00 | 1,400.00 |
| Force @ 2.5 mm (N) | 1,306.00 | 1,618.00 |
| Force @ 3.0 mm (N) | 1,361.00 | 1,673.00 |

Testing Machine STM-20 5965542
Load Cell S/N (F1360947), Units (LBS) 1000
Crosshead Speed (mm / min) or Rate 12.7
Extension or Position Measured by XHD_100 (XHD100)

Notes:



Operator _____
Part Number 180-4450

Template No 107 20-Sep-19
SACO Research

By: DC Date: 9/20/2019
SACO Research 41735 Elm St, #401 Murrieta, CA 92562 Tel: 310-694-2082 FAX



300
Non-Impact
Crash Plug
SU
1/12/2021

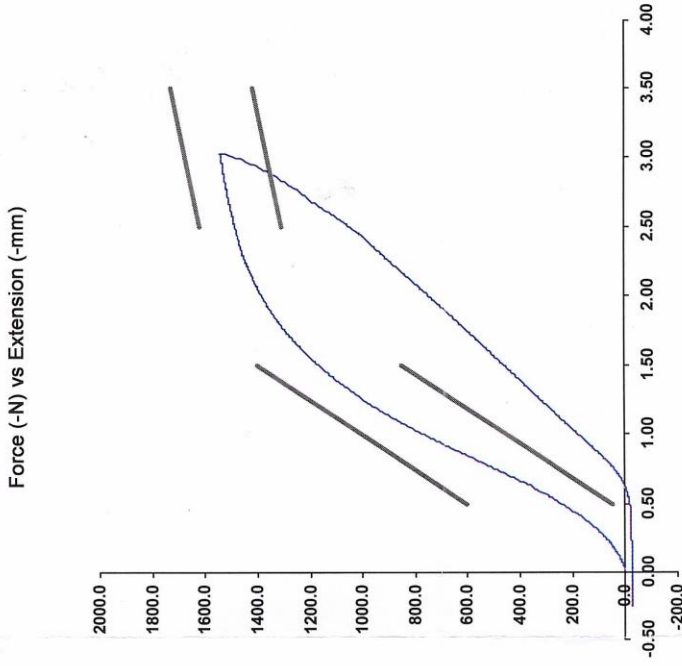
SID-IIs Pelvis Plug Certification Test

Plug S/N 13468
Test Number 11111
Report Number 11149
Test Date 9/20/2019 10:37:53 AM

| Test Results | Spec Min | Spec Max |
|--------------------|----------|----------|
| Force @ 0.5 mm (N) | 50.00 | 600.00 |
| Force @ 1.5 mm (N) | 850.00 | 1,400.00 |
| Force @ 2.5 mm (N) | 1,306.00 | 1,618.00 |
| Force @ 3.0 mm (N) | 1,361.00 | 1,673.00 |

Testing Machine STM-20 5965542
Load Cell S/N (F1360947), Units (LBS) 1000
Crosshead Speed (mm / min) or Rate 12.7
Extension or Position Measured by XHD_100 (XHD100)

Notes:



Operator
Part Number 180-4450

Template No 107
SACO Research

By: DC Date: 9/20/2019
SACO Research 41735 Elm St, #401 Murrieta, CA 92562 Tel 310-694-2082 Fax

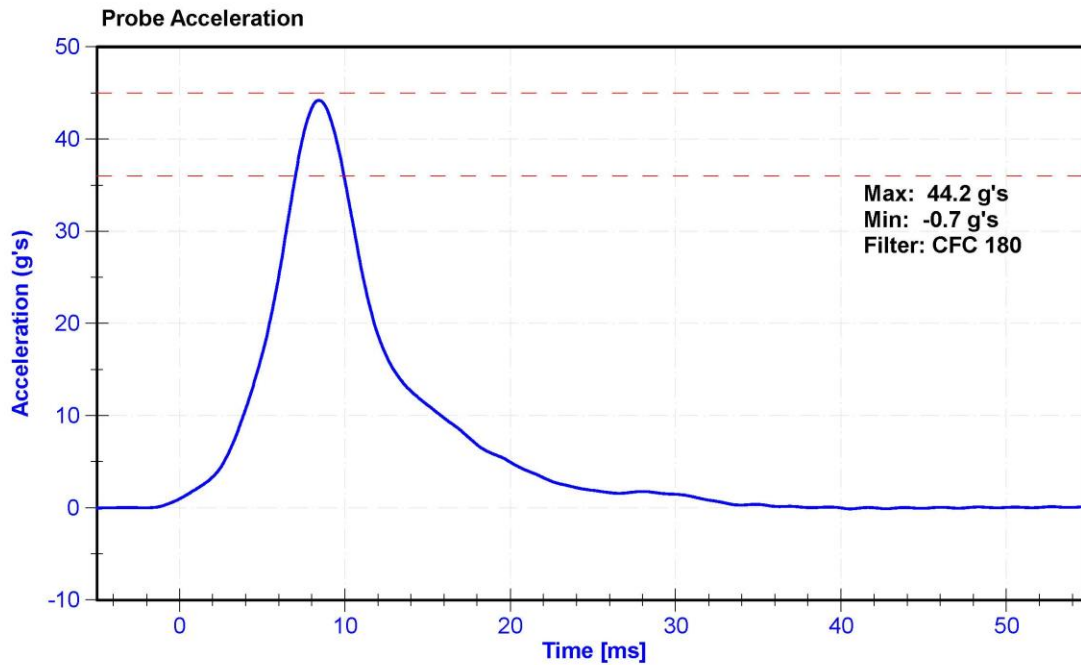
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|-------------------|------|-----------------------|------------|
| ATD Manufacturer | FTSS | Test Technician | K. Brogan |
| ATD Serial Number | 300 | Laboratory Supervisor | S. Vacanti |

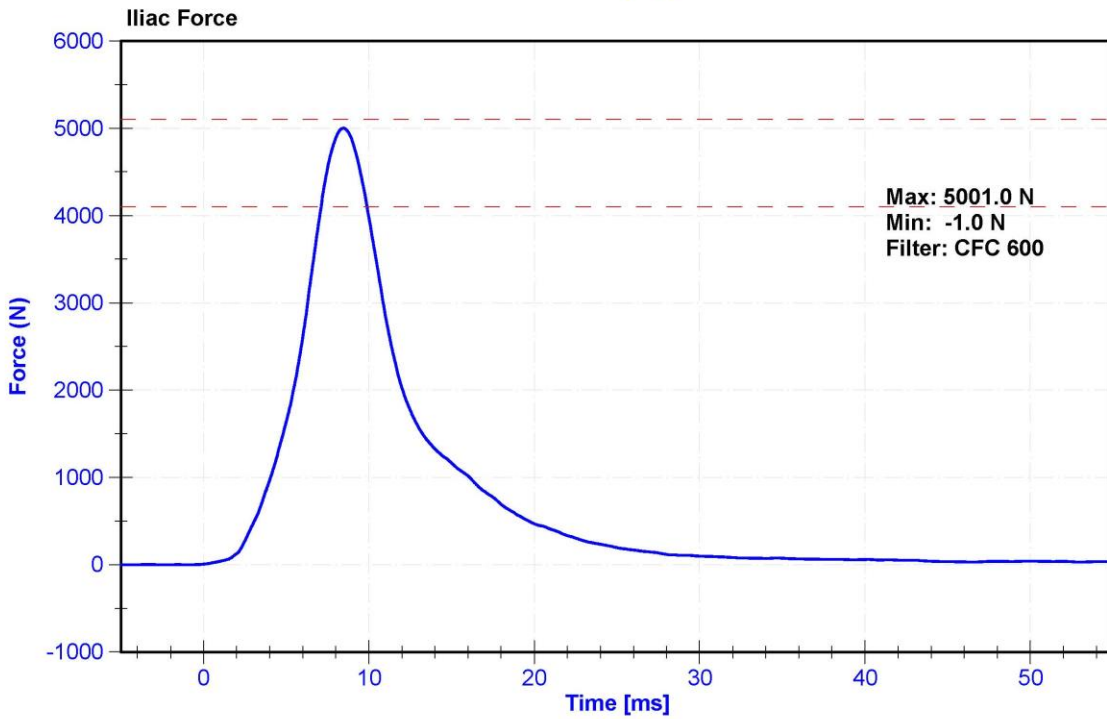
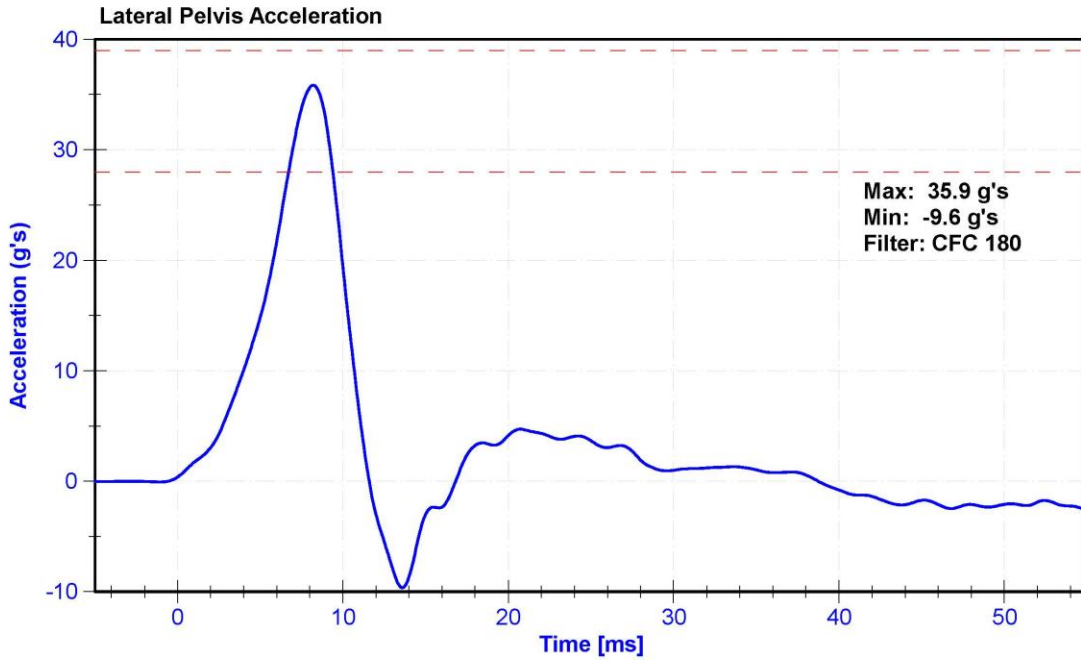
Results

| Test Parameter | Minimum Specification | Maximum Specification | Unit | Result | Pass/Fail |
|-----------------------------|-----------------------|-----------------------|------|--------|-----------|
| Temperature | 20.6 | 22.2 | °C | 20.9 | Pass |
| Humidity | 10 | 70 | % | 29.0 | Pass |
| Velocity | 4.2 | 4.4 | m/s | 4.27 | Pass |
| Probe Acceleration | 36 | 45 | g's | 44.2 | Pass |
| Lateral Pelvis Acceleration | 28 | 39 | g's | 35.9 | Pass |
| Iliac Force | 4100 | 5100 | N | 5001.0 | Pass |

Transducer Calibrations

| Channel | Manufacturer | Serial Number | Calibration Date | Calibration Due Date |
|------------------------|---------------|---------------|------------------|----------------------|
| Pendulum Accelerometer | MSI 64C-2000 | A286228 | 1/29/2020 | 1/28/2021 |
| Pelvis Y Accelerometer | ENDEVCO 7264C | AC-P51731 | 11/9/2020 | 5/10/2021 |
| Iliac Load Cell | DENTON 3228J | LC-279Fy | 11/23/2020 | 11/23/2021 |





APPENDIX D

TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

Table 1 – Dummy Instrumentation (SID-IIs)

| | | | | SID-IIs S/N: 300 | | |
|----------------------------------|---------------|--------|-----------|------------------|--------------|------------------|
| | | | | Serial Number | Manufacturer | Calibration Date |
| Head Accelerometers | | X | AC-P59018 | Endevco | 11/10/2020 | |
| | | Y | AC-P79189 | Endevco | 11/10/2020 | |
| | | Z | AC-P58777 | Endevco | 11/10/2020 | |
| Head Accelerometers - Redundant | | X | AC-P68057 | Endevco | 11/10/2020 | |
| | | Y | AC-P58986 | Endevco | 11/10/2020 | |
| | | Z | AC-P52025 | Endevco | 11/10/2020 | |
| Displacement Potentiometer | Shoulder | | Y | | | |
| | Thoracic Rib | Upper | Y | DS-451GFE | Servo | 11/10/2020 |
| | | Middle | Y | DS-040GFE | Servo | 11/10/2020 |
| | | Lower | Y | DS-1156GFE | Servo | 11/9/2020 |
| | Abdominal Rib | Upper | Y | DS-308GFE | Servo | 11/10/2020 |
| | | Lower | Y | DS-307GFE | Servo | 11/10/2020 |
| Lower Spine Accelerometers (T12) | | X | AC-P64003 | Endevco | 11/9/2020 | |
| | | Y | AC-P64147 | Endevco | 11/9/2020 | |
| | | Z | AC-P58786 | Endevco | 11/9/2020 | |
| Acetabulum Load Cell | | Y | LC-236Fy | Denton | 3/18/2020 | |
| Lilac Wing Load Cell | | Y | LC-279Fy | Denton | 11/23/2020 | |
| Pelvis Plug (Struck Side) | | | 13247 | SACO | 8/12/2019 | |
| Pelvis Plug (Non-Struck Side) | | | 13350 | SACO | 9/19/2019 | |

Table 2 – Vehicle Instrumentation

| Vehicle Instrumentation | | Serial Number | Manufacturer | Calibration Date |
|---------------------------|---|-------------------|-------------------------|------------------|
| Vehicle Center of Gravity | X | 1201-1000_A315767 | Measurement Specialties | 11/19/2020 |
| Vehicle Center of Gravity | Y | 1201-1000_A315769 | Measurement Specialties | 11/19/2020 |
| Vehicle Center of Gravity | Z | 1201-1000_A315812 | Measurement Specialties | 11/19/2020 |
| Left Floor Sill | Y | 1201-1000_A280196 | Measurement Specialties | 7/27/2020 |
| A-Pillar Sill | Y | 1201-1000_A280004 | Measurement Specialties | 11/19/2020 |
| A-Pillar Low | Y | 1201-1000_A350956 | Measurement Specialties | 11/19/2020 |
| A-Pillar Mid | Y | 1201-1000_A315731 | Measurement Specialties | 11/19/2020 |
| B-Pillar Sill | Y | 1201-1000_A315192 | Measurement Specialties | 11/20/2020 |
| B-Pillar Low | Y | 1201-1000_A315885 | Measurement Specialties | 11/20/2020 |
| B-Pillar Mid | Y | 1201-1000_A315743 | Measurement Specialties | 11/20/2020 |
| Driver Seat | Y | 1201-1000_A315890 | Measurement Specialties | 11/19/2020 |
| Engine Top | X | 1201-1000_A217578 | Measurement Specialties | 11/11/2020 |
| Engine Top | Y | 1201-1000_A280846 | Measurement Specialties | 9/18/2020 |
| Firewall | Y | 1201-1000_A315732 | Measurement Specialties | 11/19/2020 |
| Right Roof | Y | 1201-1000_A315904 | Measurement Specialties | 11/19/2020 |
| Right Floor Sill | Y | 1201-1000_A350993 | Measurement Specialties | 9/25/2020 |
| Rear Floorpan | X | 1201-1000_A315184 | Measurement Specialties | 11/19/2020 |
| Rear Floorpan | Y | 1201-1000_A315805 | Measurement Specialties | 11/19/2020 |

Table 3 – Pole Instrumentation

| Pole Instrumentation | Serial Number | Manufacturer | Calibration Date |
|----------------------|-------------------|--------------|------------------|
| Load Cell 1 | 1220AF-1057559-F0 | Interface | 9/2/2020 |
| Load Cell 2 | 1220AF-1117006-F0 | Interface | 9/2/2020 |
| Load Cell 3 | 1220AF-1117025-F0 | Interface | 9/2/2020 |
| Load Cell 4 | 1220AF-1117019-F0 | Interface | 9/2/2020 |
| Load Cell 5 | 1220AF-1117011-F0 | Interface | 9/2/2020 |
| Load Cell 6 | 1220AF-1117017-F0 | Interface | 9/2/2020 |
| Load Cell 7 | 1220AF-1117035-F0 | Interface | 9/2/2020 |
| Load Cell 8 | 1220AF-1117023-F0 | Interface | 9/2/2020 |