

FINAL REPORT NUMBER: SPNCAP-TRC-24-002

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

**KIA CORPORATION
2024 Kia Seltos SUV
NHTSA NUMBER: M20244211**

**PREPARED BY:
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Report Date: December 12, 2024

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
Washington, D.C. 20590**

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Report Prepared By: ILO Project Operations Group

Report Approved By: _____



John Shultz

Approval Date: December 12, 2024

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

Technical Report Documentation Page

1. Report No. SPNCAP-TRC-24-002	2. Government Accession No.	3. Recipient's Catalog No.																									
4. Title and Subtitle Final Report of New Car Assessment Program Side Impact Pole Testing of 2024 Kia Seltos SUV NHTSA No.: M20244211		5. Report Date December 12, 2024																									
		6. Performing Organization Code TRC Inc.																									
7. Author(s) John Shultz, Project Manager		8. Performing Organization Report No. 240612																									
9. Performing Organization Name and Address Transportation Research Center Inc. 10820 State Route 347 East Liberty, OH 43319		10. Work Unit No.																									
		11. Contract or Grant No. 693JJ920D000018																									
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards Mail Code NRM-110 1200 New Jersey Ave, SE Washington, DC 20590		13. Type of Report and Period Covered Final Test Report June 12, 2024 – December 12, 2024																									
		14. Sponsoring Agency Code NRM-110																									
15. Supplemental Notes																											
16. Abstract A 32.2 km/h (20 mph), 75° oblique impact Side NCAP Test was conducted on the subject vehicle, a 2024 Kia Seltos 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 by Transportation Research Center Inc. in East Liberty, Ohio, on June 12, 2024. The impact velocity was 32.06 km/h, and the ambient temperature at the struck (left) side of the target vehicle at the time of impact was 21.4° C. The test vehicle's post-test maximum crush was 303 mm at Level 3. The test or target vehicle's performance is given below: <table border="1"> <thead> <tr> <th></th><th>Unit</th><th>Threshold</th><th>Front SID-IIs</th></tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆):</td><td>NA</td><td>1000</td><td>227.430</td></tr> <tr> <td>Resultant Lower Spine Acceleration:</td><td>g's</td><td>82</td><td>41.090</td></tr> <tr> <td>Total Pelvic Force: (sum of acetabular and iliac forces)</td><td>N</td><td>5525</td><td>2755.990</td></tr> <tr> <td>Maximum Thoracic Rib Deflection</td><td>mm</td><td>38*</td><td>24.360</td></tr> <tr> <td>Maximum Abdomen Rib Deflection</td><td>mm</td><td>45*</td><td>18.040</td></tr> </tbody> </table> * Proposed IARV The doors on the struck side did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.					Unit	Threshold	Front SID-IIs	Head Injury Criteria (HIC ₃₆):	NA	1000	227.430	Resultant Lower Spine Acceleration:	g's	82	41.090	Total Pelvic Force: (sum of acetabular and iliac forces)	N	5525	2755.990	Maximum Thoracic Rib Deflection	mm	38*	24.360	Maximum Abdomen Rib Deflection	mm	45*	18.040
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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 Washington, DC 20590																									
19. Security Classification (of this report) Unclassified	20. Security Classification (of this page) Unclassified	21. Number of Pages 126	22. Price																								

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SECTION 1

TEST PURPOSE AND PROCEDURE

TEST PURPOSE AND PROCEDURE

This side impact test was conducted as part of the MY24 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. 693JJ920D000018. The purpose of this test is to generate comparative side impact performance in a 2024 Kia Seltos SUV manufactured by KIA CORPORATION. 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 model year 2024 Kia Seltos SUV. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.06 km/h. The side impact test was conducted by Transportation Research Center Inc. in East Liberty, OH, on June 12, 2024. Pre-test and post-test photographs of the test vehicle and the 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. Camera locations and other pertinent camera information are included in this report.

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

- Primary and Redundant Head CG Triaxial Accelerometers
- Thorax Upper, Middle, and Lower Rib Displacement Potentiometers
- Abdomen Upper and Lower Rib Displacement Potentiometers
- Lower Spine (T12) Triaxial Accelerometers
- Iliac Load Cell
- Acetabulum Load Cell

Appendix B contains the vehicle and dummy response data. Dummy configuration and performance verification data can be found in Appendix C of this report. Appendix D contains the test equipment and instrumentation calibration data.

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

Measurement Description	Driver ATD (SID-IIs)		
	Units	IARV	Result
Head Injury Criteria (HIC ₃₆)	NA	1000	227.430
Lower Spine Acceleration Resultant	G	82	41.090
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2755.990
Maximum Thoracic Rib Deflection	mm	38*	24.360
Maximum Abdominal Rib Deflection	mm	45*	18.040

* Proposed IARV

Supplemental restraint information is given below:

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

GENERAL COMMENTS

SECTION 3
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2024 Kia Seltos SUV
 Test Program: SPNCAP Side Impact

NHTSA No.: M20244211
 Test Date: 6/12/2024

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M20244211
Model Year	2024
Make	Kia
Model	Seltos
Body Style	MPV
VIN	KNDEU2AA7R7587699
Body Color	Gravity Gray
Odometer Reading (km/mi)	166 mi
Engine Displacement (L)	2.0
Type/No. Cylinders	Inline/4
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	CVT
Overdrive	No
Final Drive	FWD
Roof Rack	No
Sunroof/T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes

Traction Control System (TCS)	Yes
Auto-Leveling System	No
Automatic Door Locks (ADL)	Yes
Power Window Auto-Reverse	No
Other Optional Feature	No
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	No
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	Yes
Driver Load Limiter	Yes
Rear Pass. Load Limiter	Yes
Other	No

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

No

DATA FROM CERTIFICATION LABEL

Manufactured By	KIA CORPORATION
Date of Manufacturer	11/23
Vehicle Type	MPV

GVWR (LB)	3925
GAWR Front (LB)	2293
GAWR Rear (LB)	2062

VEHICLE SEATING AND WEIGHT CAPACITY DATA

	Front	Rear	Third	Total
Designated Seating Capacity (DSC)	2	3	N/A	5
Vehicle Capacity Weight (VCW) (kg)				390.0
DSC X 68.0 kg				340.0
Rated Cargo and Luggage Weight (RCLW) (kg)				50.0

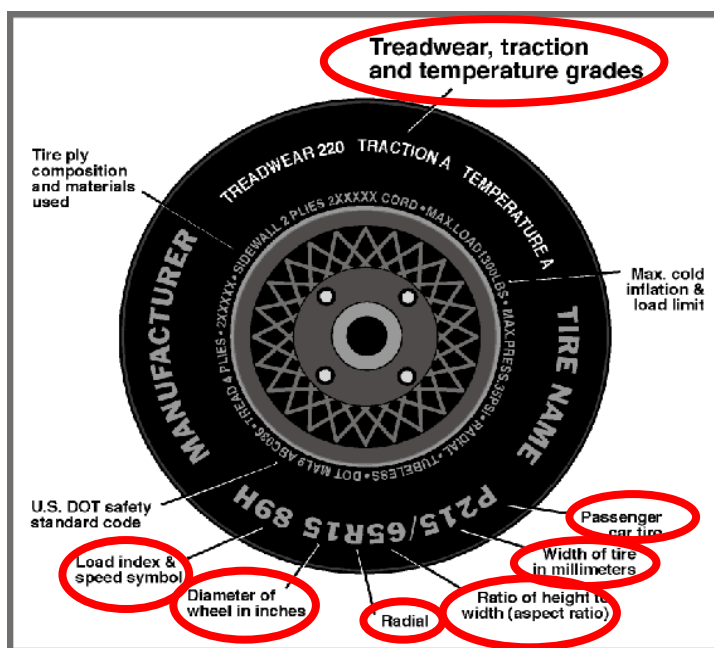
VEHICLE SEAT TYPE

Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
						W/ Lever	W/ Knob
Front Seat	Yes	N/A	N/A		N/A	Yes	N/A
Rear or Second Row Seat	N/A	N/A	Yes	N/A	N/A	Yes	N/A
Third row seat	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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

Test Vehicle: 2024 Kia Seltos SUV
 Test Program: SPNCAP Side Impact

NHTSA No.: M20244211
 Test Date: 6/12/2024



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	240	230
Recommended Tire Size	215/55R17	215/55R17
Tire Size on Vehicle	215/55R17	215/55R17
Tire Manufacturer	Kumho	Kumho
Tire Model	Solus TA31	Solus TA31
Treadwear	500	500
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	1	1
Tire Plies Body	4	4
Load Index/Speed Symbol	94V	94V
Tire Material	Steel, Polyester, Polyamide	Steel, Polyester, Polyamide
DOT Safety Code Left	DOT 1Y0 99YAY1	DOT 1Y0 99YAY1
DOT Safety Code Right	DOT 1Y0 99YAY1 4523	DOT 1Y0 99YAY1

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

Test Vehicle: 2024 Kia Seltos SUV
 Test Program: SPNCAP Side Impact

NHTSA No.: M20244211
 Test Date: 6/12/2024

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	270	270	270	270
Tire Placard	kPa	240	240	230	230
Owner's Manual	kPa	240	240	230	230
As Tested	kPa	240	240	230	230

TEST VEHICLE AXLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	409.2	274.6		426.2	320.2		433.2	321.2	
Right	kg	397.4	263.0		392.0	298.4		395.0	293.8	
Ratio	%	60.0	40.0		56.9	43.1		57.4	42.6	
Totals	kg	806.6	537.6	1344.2	818.2	618.6	1436.8	828.2	615.0	1443.2

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total As Delivered Weight (UVW)	kg	1344.2
Actual Weight of 1 P572V ATD (SID-IIs) Dummy Used	kg	49.0
Rated Cargo/Luggage Weight (RCLW)	kg	50
Calculated Vehicle Target Weight (TVTW)	kg	1443.2

(A)
 (B)
 (C)
 (A+B+C)

Does the measured As Tested 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

	Units	As Delivered	As Tested	Fully Loaded	Meets Requirement***
Driver Door Sill Angle (front-to-rear)*	Deg.	-0.3	-0.2	0.0	Yes
Front Passenger Sill Angle (front-to-rear)*	Deg.	-0.1	-0.2	0.2	Yes
Front Bumper-Line Angle (left-to-right)**	Deg.	-0.2	-0.3	-0.4	Yes
Rear Bumper-Line Angle (left-to-right)**	Deg.	-0.4	-0.4	-0.6	Yes
Vehicle CG (Aft of Front Axle)	mm	1053	1134	1122	
Vehicle CG (Left (+) / Right (-) from longitudinal Centerline)	mm	13	30	35	

*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 Requirements".

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

Test Vehicle: 2024 Kia Seltos SUV
Test Program: SPNCAP Side Impact

NHTSA No.: M20244211
Test Date: 6/12/2024

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Ballast: Steel plate	36.8
Components Removed: None	0.0

Test height adjustable suspension setting, if applicable:

N/A

TEST SURFACE MARKINGS

	Distance from 75° Impact Location Line (mm)
Fore 25 mm target	1835
Aft 25 mm target	1830

DATA SHEET NO. 2**SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEMS DATA**Test Vehicle: 2024 Kia Seltos SUVNHTSA No.: M20244211Test Program: SPNCAP Side ImpactTest Date: 6/12/2024**SEAT POSITIONING**

The driver 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	14.7	12.8	16.3
Front Passenger Seat	16.6	16.6	16.6
Front Center Seat*	N/A	N/A	N/A
Struck Side Rear Seat	14.6	14.6	14.6
Non-Struck Side Rear Seat	13.2	13.2	13.2
Rear Center Seat*	11.8	11.8	11.8

* If applicable.

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	16.3	220	Max	N/A	N/A	N/A
			Mid	207	214	220
			Min	N/A	N/A	N/A
Front Passenger Seat	16.6	167	Max	N/A	N/A	N/A
			Mid	159	163	167
			Min	N/A	N/A	N/A
Front Center Seat*	N/A	N/A	Max	N/A	N/A	N/A
			Mid	N/A	N/A	N/A
			Min	N/A	N/A	N/A
Struck Side Rear Seat	14.6	N/A	Max	N/A	N/A	N/A
			Mid	N/A	N/A	N/A
			Min	N/A	N/A	N/A
Non-Struck Side Rear Seat	13.2	N/A	Max	N/A	N/A	N/A
			Mid	N/A	N/A	N/A
			Min	N/A	N/A	N/A
Rear Center Seat*	11.8	N/A	Max	N/A	N/A	N/A
			Mid	N/A	N/A	N/A
			Min	N/A	N/A	N/A

* If applicable.

DATA SHEET NO. 2 (CONTINUED)

SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEMS DATA

Test Vehicle: 2024 Kia Seltos SUV
 Test Program: SPNCAP Side Impact

NHTSA No.: M20244211
 Test Date: 6/12/2024

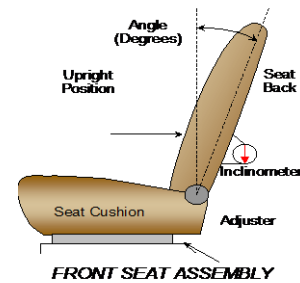
SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position from Forward most Position	
	mm	Detents*	mm	Detent*
Driver Seat	245	38	0	0
Front Passenger Seat	224	35	0	Full Forward
Front Center Seat*	N/A	N/A	N/A	N/A
Struck Side Rear Seat	Fixed	N/A	N/A	N/A
Non-Struck Side Rear Seat	Fixed	N/A	N/A	N/A
Rear Center Seat*	Fixed	N/A	N/A	N/A

* If applicable.

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 is set to match the struck-side rear seat back.



Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degrees	Detent*
Driver Seat w/ Seated Dummy	59.8	31	2.45	6
Front Passenger Seat	59.5	31	2.45	6
Front Center Seat*	N/A	N/A	N/A	N/A
Struck Side Rear Seat	6.2	2	N/A	N/A
Non-Struck Side Rear Seat	6.2	2	N/A	N/A
Rear Center Seat*	6.2	2	N/A	N/A

* If applicable.

SEAT BELT ANCHORAGE ADJUSTMENT

Seat belt anchorages are adjusted with the information provided by the manufacturer on Form No. 1

	Total # of Positions	Placed in Position #
Driver Seat	3	0

HEAD RESTRAINT ADJUSTMENT

Head restraints are adjusted to the lowest and most full forward in-use position.

	Total # of Positions	Placed in Position #
Driver Seat	6	0

DATA SHEET NO. 2 (CONTINUED)

SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEMS DATA

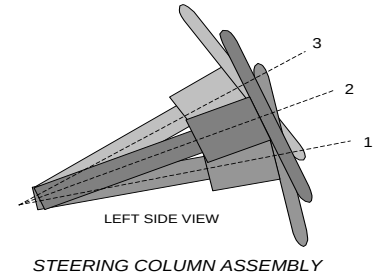
Test Vehicle: 2024 Kia Seltos SUV
 Test Program: SPNCAP Side Impact

NHTSA No.: M20244211
 Test Date: 6/12/2024

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel geometric locus it describes when moved through its full range of motion.

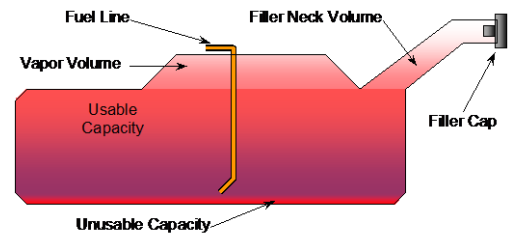
	Degrees	Fore/Aft Position, mm
Lowermost, Position No. 1	24.5	
Geometric Center, Position No. 2	27.0	
Uppermost, Position No. 3	29.5	
Telescoping Steering Wheel Travel		48
Test Position	27.0	24



FUEL PUMP

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

Fuel pump will operate when engine system is normally operating.



FUEL TANK CAPACITY

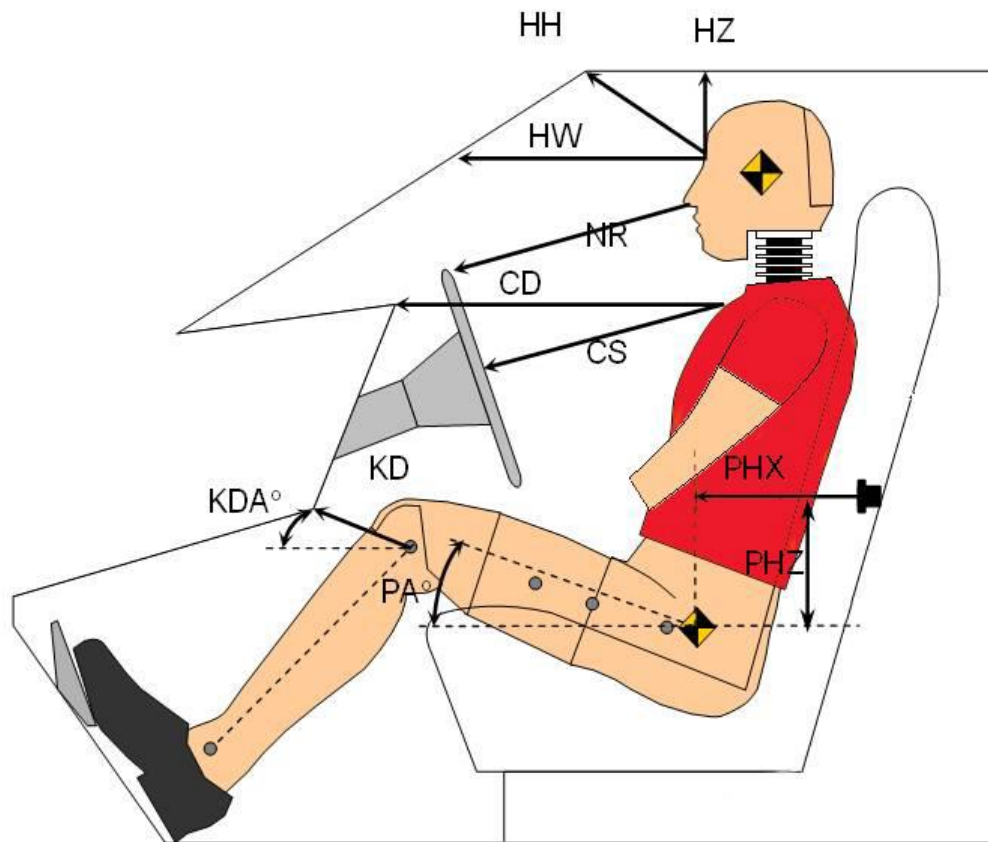
	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	50.0
Usable Capacity of "Optional" Tank (see Form No. 1)	N/A
Usable Capacity of Standard Tank (see Owner's Manual)	50.0
Usable Capacity of Optional Tank (see Owner's Manual)	N/A
93% of Usable Capacity	46.5
Actual Amount of Solvent Used in Test	46.5
1/3 of Usable Capacity	16.7

Is the Actual Amount of Solvent Used in the test equal to 93% $\pm$ 1% of the Usable Capacity stated in on Form No. 1? ☒ YES ☐ NO

DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2024 Kia Seltos SUV
 Test Program: SPNCAP Side Impact

NHTSA No.: M20244211
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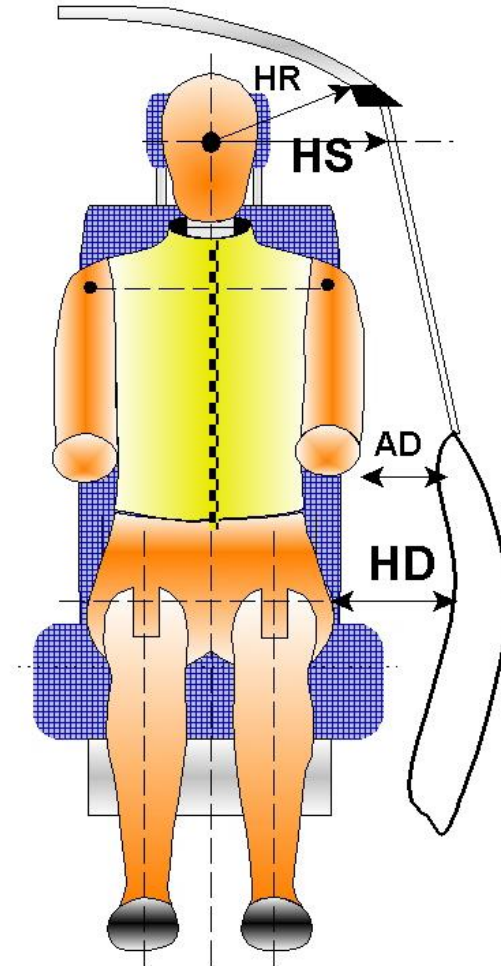


Code	Measurement Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	272	
HW	Head to Windshield	597	
HZ	Head to Visor	216	
NR	Nose to Rim	285	
CD	Chest to Dashboard	490	
CS	Chest to Steering Wheel	213	
KDL/KDLA°	Left Knee to Dash	115	8.0
KDR/KDRA°	Right Knee to Dash	81	8.2
PAX°	Pelvic Tilt Angle (X-axis)		21.7
PAY°	Pelvic Tilt Angle (Y-axis)		0.4
PHX	Hip Point to Striker (X-Axis)	319	
PHZ	Hip Point to Striker (Z-Axis)	220	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2024 Kia Seltos SUV
 Test Program: SPNCAP Side Impact

NHTSA No.: M20244211
 Test Date: 6/12/2024

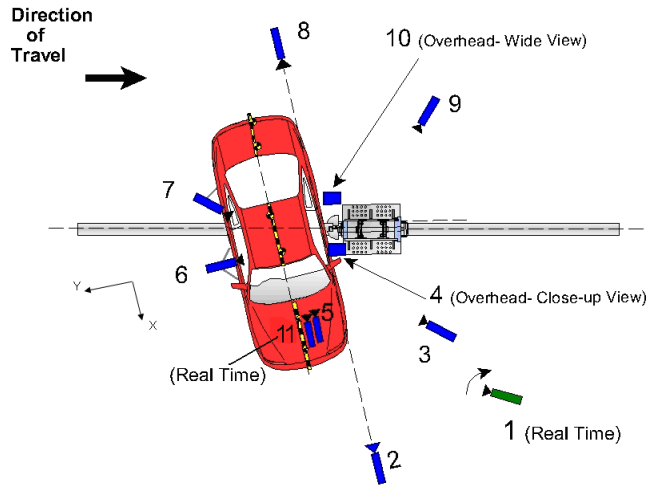


Code	Measurement Description	Length (mm)
HR	Head to Side Header	278
HS	Head to Side Window	348
AD	Arm to Door	143
HD	Hip Point to Door	159

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2024 Kia Seltos SUV
 Test Program: SPNCAP Side Impact

NHTSA No.: M20244211
 Test Date: 6/12/2024



REFERENCE: (from point of impact for X and Y; from ground for Z)
 + X = Forward of vehicle, + Y = Right of vehicle, + Z = Down

Camera No.	View	Coordinates (mm)			Lens Length (mm)	Operating Frame Rate (fps)
		X	Y	Z		
1	Real time (24-30 fps) pan view of impact				Zoom	30
2	Front ground level – impact view	5350	-540	-1669	20	1000
3	Impact side 45° – forward pole view	2899	-1650	-1582	20	1000
4	Overhead Close-up view of impact	-50	120	-4650	50	1000
5	Onboard – dummy front view				8.5	1000
6	Onboard – dummy side view				8.5	1000
7	Onboard – dummy rear oblique view				8.5	1000
8	Rear ground level – impact view	-5936	2524	-1572	20	1000
9	Impact side 45° – rearward pole view	-2982	-1576	-1451	20	1000
10	Overhead wide view of impact	0	0	-4650	12.5	1000
11	Real time dummy front view				Zoom	60

All measurements accurate to +/- 6 mm.

NOTE: Vehicle was at a 75° angle to the rigid pole.

If applicable, explain why camera(s) did not run: N/A

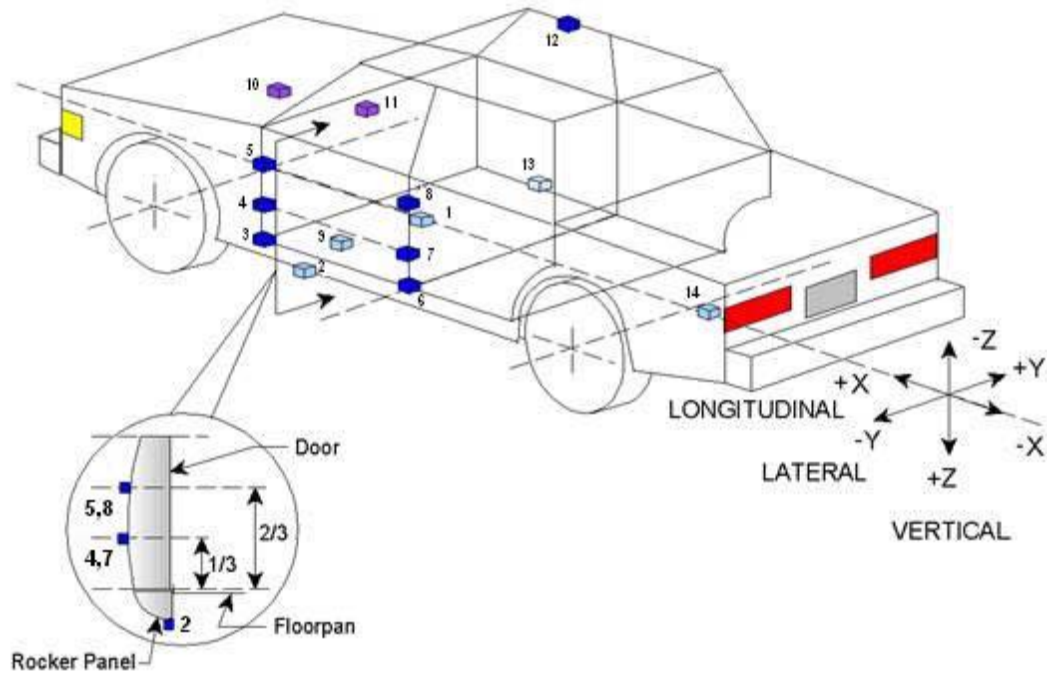
INSTRUMENTATION

	Number of Channels
Driver Dummy	16
Vehicle Structure	18
Pole Load Cells	8
TOTAL	42

DATA SHEET NO. 6
VEHICLE ACCELEROMETER DATA

Test Vehicle: 2024 Kia Seltos SUV
Test Program: SPNCAP Side Impact

NHTSA No.: M20244211
Test Date: 6/12/2024



Accelerometer/Sensor Location				
	ID	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2584	108	-304
2	Left Floor Sill	2674	-718	-258
3	A-Pillar Sill	2959	-718	-345
4	A-Pillar Low	3017	-810	-442
5	A-Pillar Mid	3025	-798	-696
6	B-Pillar Sill	1755	-704	-265
7	B-Pillar Low	1974	-808	-453
8	B-Pillar Mid	1966	-800	-752
9	Driver Seat Track	2266	-563	-284
10	Engine Top	3709	117	-737
11	Firewall	3473	13	-786
12	Right Roof	2175	621	-1441
13	Right Floor Sill	2671	712	-265
14	Rear Floorpan	261	-2	-386

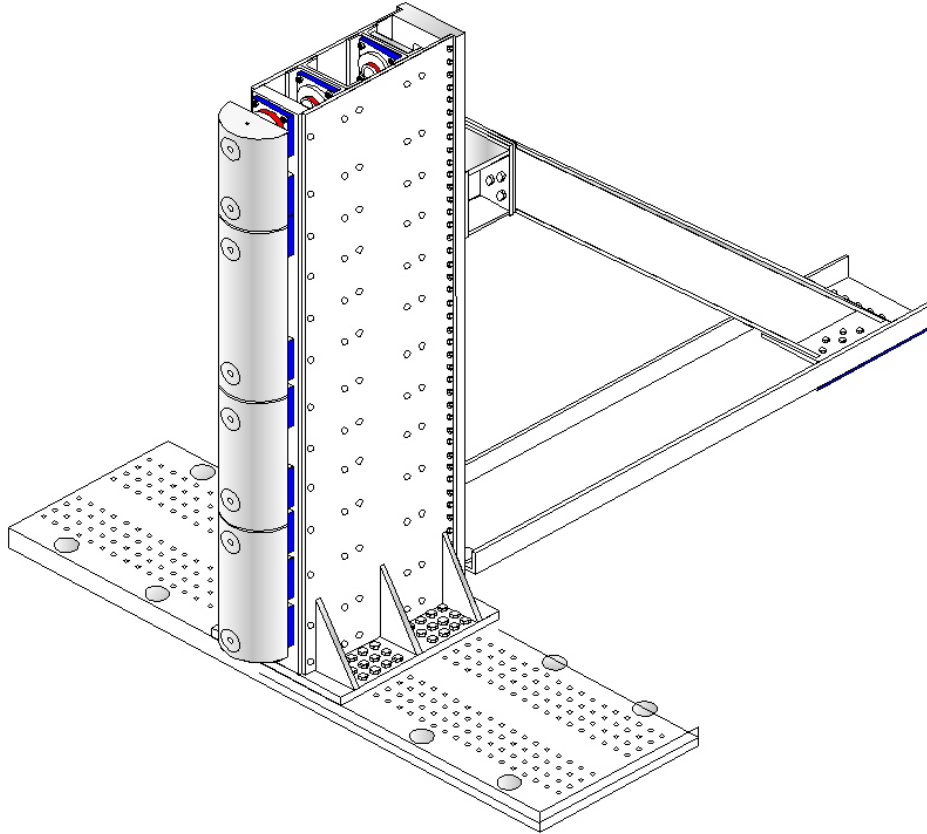
Reference: X - Test Vehicle Rear Bumper (+ forward)
Y - Test Vehicle Centerline (+ to right)
Z - Ground Plane (+ down)

DATA SHEET NO. 7
RIGID POLE LOAD CELL DATA

Test Vehicle: 2024 Kia Seltos SUV
Test Program: SPNCAP Side Impact

NHTSA No.: M20244211
Test Date: 6/12/2024

FOIL 300K RIGID POLE



Load Cell Locations	
ID	Height From Top of Carrier (mm)
1	87
2	468
3	648
4	978
5	1168
6	1651
7	1816
8	2057

DATA SHEET NO. 8
POST-TEST OBSERVATIONS

Test Vehicle: 2024 Kia Seltos SUV
Test Program: SPNCAP Side Impact

NHTSA No.: M20244211
Test Date: 6/12/2024

TEST DUMMY INFORMATION AND CONTACT POINTS

Dummy Body Part	Driver SID-IIs Dummy
Face	SCAB
Top of Head	SCAB
Left Side of Head	SCAB
Back of Head	Head Rest
Left Shoulder	SAB
Upper Torso	SAB, Seat Bolster
Lower Torso	SAB, Seat Bolster
Left Hip	SAB
Left Knee	None

POST-TEST DOOR PERFORMANCE

Description	Struck Side		Non-Struck Side		Rear Hatch/ Other Door
	Front	Rear	Front	Rear	
Remained Closed and Operational	Yes	Yes	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, Record Width of Opening at Striker (mm)	N/A	N/A	N/A	N/A	N/A

POST-TEST SEAT PERFORMANCE

Description	Struck Side		Non-Struck Side	
	Front	Rear	Front	Rear
Seat Movement Along Seat Track	No	N/A	No	N/A
Seat Disengagement from Floor pan	No	N/A	No	No
Seat Back Movement from Initial Position	No	No	No	No
Seat Back Collapse	No	No	No	No

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	Good
Sill Separation	None
Windshield Damage	Left Side of Windshield and top left corner separated windshield cracked
Side Window Damage	Driver's window broken
Other Notable Effects	None

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

Test Vehicle: 2024 Kia Seltos SUV
Test Program: SPNCAP Side Impact

NHTSA No.: M20244211
Test Date: 6/12/2024

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side (Driver)		Struck Side (Rear Passenger)	
	Mounted	Deployed	Mounted	Deployed
Front Airbag	Yes	No		
Knee Airbag	No	N/A		
Side Curtain Airbag	Yes	Yes	Yes	Yes
Side Torso/Pelvis Airbag	Yes	Yes	No	N/A
Side Torso Airbag	No	N/A	No	N/A
Seat Belt Pretensioner	Yes	Yes	Yes	No
Seat Belt Load Limiter	Yes	Yes	Yes	No
Other	No	N/A	No	N/A

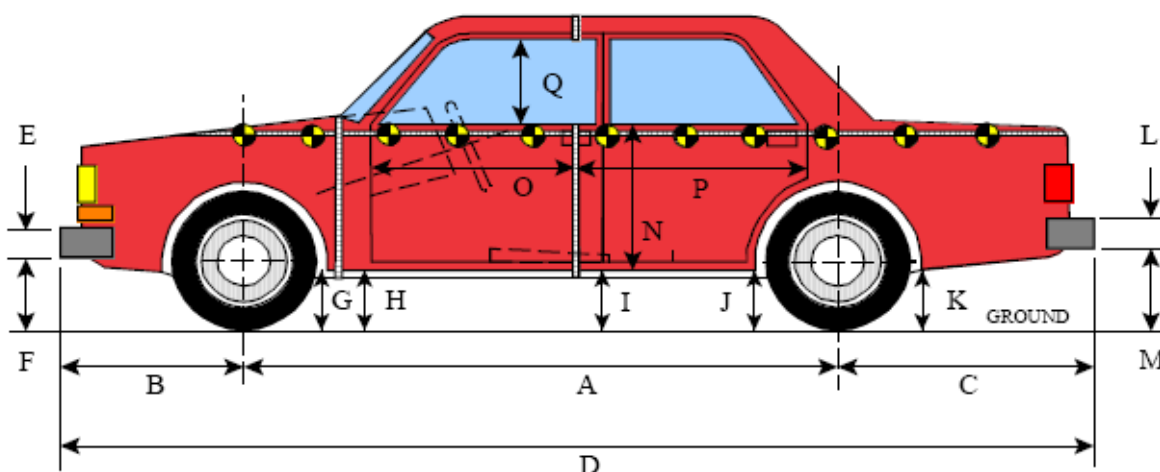
VEHICLE SPEED, VEHICLE ANGLE AT IMPACT AND IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		1086
Actual Impact Point (Aft of Front Axle)	mm		1089
Horizontal Offset (+ forward / - rearward)	mm	+/- 38 of Intended Impact point	-3
Angle Between Vehicle's Longitudinal Centerline and Line of Motion	degrees	75 +/- 3	75
Trap No. 1 Velocity (Primary)	km/h	31.4 to 33.0	32.06
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.06

DATA SHEET NO. 9
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2024 Kia Seltos SUV
 Test Program: SPNCAP Side Impact

NHTSA No.: M20244211
 Test Date: 6/12/2024



LEFT SIDE VIEW

All MEASUREMENTS IN (mm) WITH TOLERANCE OF ± 3 mm

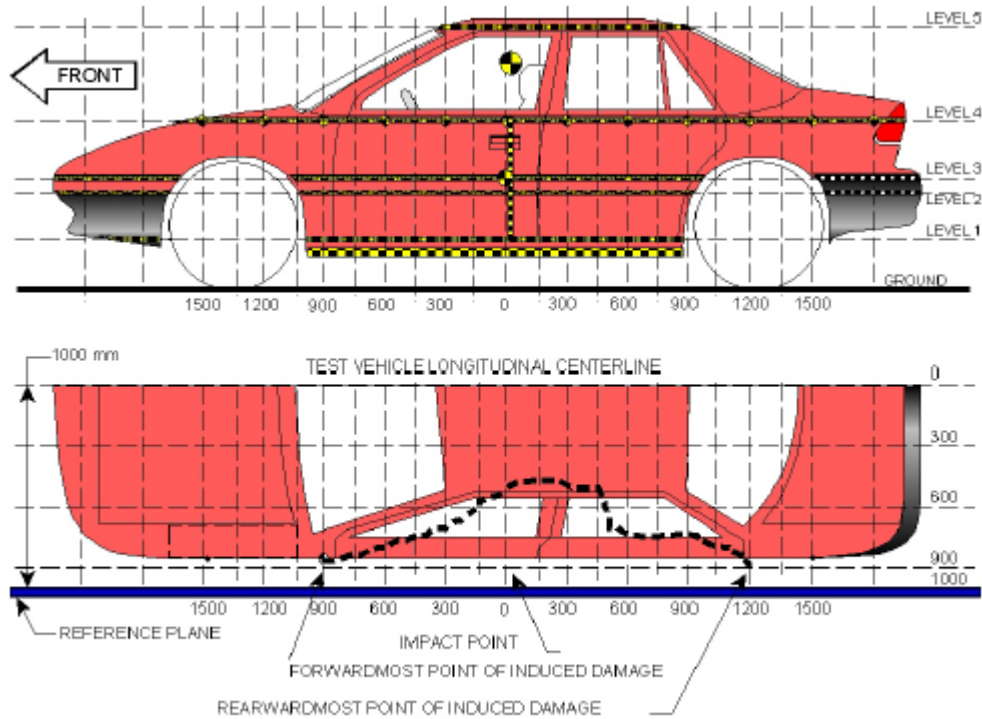
VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Change
A	Wheelbase	2633	2600	-33
B	Front Axle to Front Surface of Vehicle	854	864	10
C	Rear Axle to Rear Surface of Vehicle	900	892	-8
D	Total Length at Centerline	4387	4356	-31
E	Front Bumper Thickness	105	106	1
F	Front Bumper Bottom to Ground	505	520	15
G	Sill Height at Front Wheel Well	310	313	3
H	Sill Height at Front Door Leading Edge	313	321	8
I	Sill Height at B-Pillar	333	353	20
J1	Sill Height at Rear Wheel Well	228	274	46
J2	Pinch Weld Height at Rear Wheel Well	208	250	42
K	Sill Height Aft of Rear Wheel Well	354	402	48
L	Rear Bumper Thickness	89	90	1
M	Rear Bumper Bottom to Ground	530	578	48
N	Sill Height to Bottom of Front Window Sill	810	813	3
O	Front Door Leading Edge to Impact CL	622	500	-122
P	Rear Door Trailing Edge to Impact CL	1422	1382	-40
Q	Front Window Opening	395	366	-29
R	Right Side Length	4187	4176	-11
S	Left Side Length	4185	4143	-42
T	Vehicle Width at B-Pillars	1771	1690	-81
U	Front Wheel Track Width	1528	1526	-2
V	Rear Wheel Track Width	1567	1565	-2

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2024 Kia Seltos SUV
 Test Program: SPNCAP Side Impact

NHTSA No.: M20244211
 Test Date: 6/12/2024



NOTE: All measurements are in millimeters (mm)

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Measurement Description	Height Above Ground	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	404	248	0
2	Occupant H-Point	688	294	0
3	Mid-Door	738	303	0
4	Window Sill	1059	260	0
5	Window Top	1533	116	0

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)
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2024 Kia Seltos SUV
Test Program: SPNCAP Side Impact

NHTSA No.: M20244211
Test Date: 6/12/2024

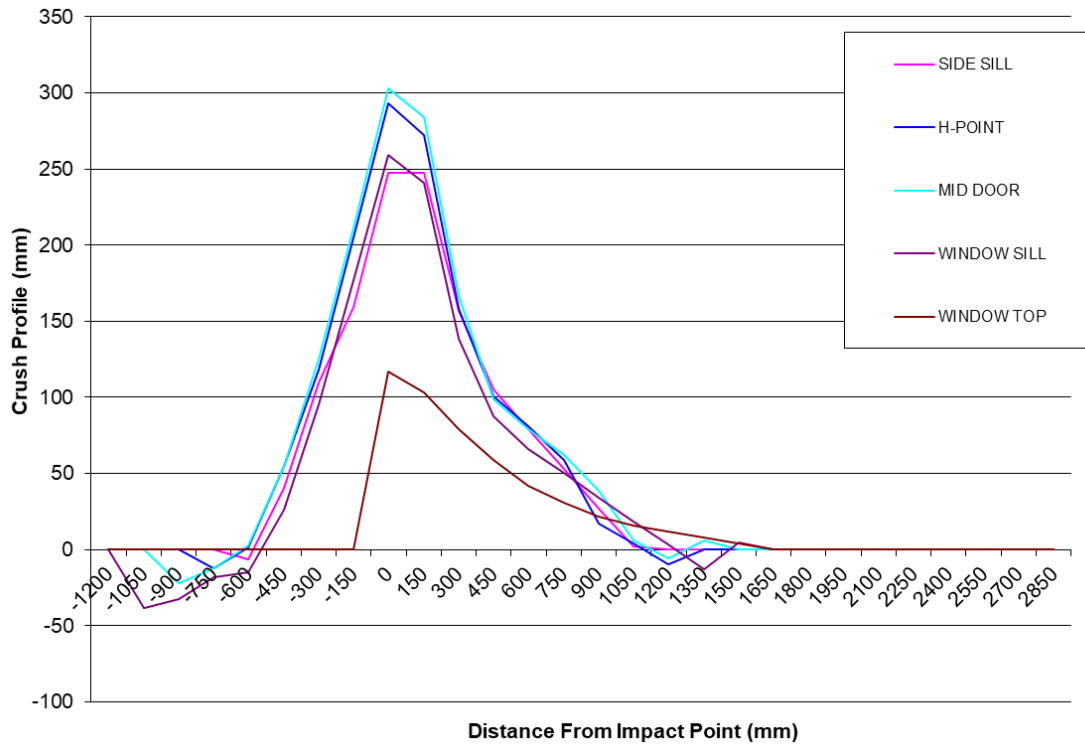
	Pre-Test					Post-Test					Exterior Crush				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-1050	0	0	0	-38	0	0	0	0	-38	0	0	0	0	-38	0
-900	0	0	-23	-33	0	0	0	-23	-33	0	0	0	-23	-33	0
-750	0	-12	-12	-18	0	0	-12	-12	-18	0	0	-12	-12	-18	0
-600	-7	1	3	-14	0	-7	1	3	-14	0	-7	1	3	-14	0
-450	40	55	55	27	0	40	55	55	27	0	40	55	55	27	0
-300	109	118	125	96	0	109	118	125	96	0	109	118	125	96	0
-150	159	205	211	177	0	159	205	211	177	0	159	205	211	177	0
0	248	294	303	260	116	248	294	303	260	116	248	294	303	260	116
150	247	272	285	241	103	247	272	285	241	103	247	272	285	241	103
300	157	158	167	139	79	157	158	167	139	79	157	158	167	139	79
450	105	101	98	88	58	105	101	98	88	58	105	101	98	88	58
600	79	81	79	66	42	79	81	79	66	42	79	81	79	66	42
750	53	59	62	50	31	53	59	62	50	31	53	59	62	50	31
900	27	17	38	34	22	27	17	38	34	22	27	17	38	34	22
1050	1	4	5	18	15	1	4	5	18	15	1	4	5	18	15
1200	0	-9	-5	3	11	0	-9	-5	3	11	0	-9	-5	3	11
1350	0	0	6	-13	8	0	0	6	-13	8	0	0	6	-13	8
1500	0	0	0	5	4	0	0	0	5	4	0	0	0	5	4

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)
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2024 Kia Seltos SUV
Test Program: SPNCAP Side Impact

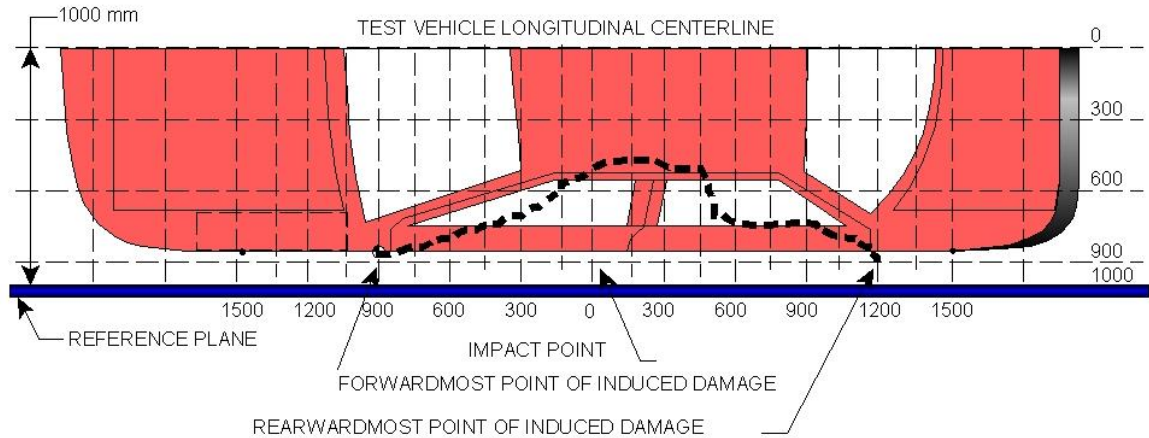
NHTSA No.: M20244211
Test Date: 6/12/2024



DATA SHEET NO. 11
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2024 Kia Seltos SUV
 Test Program: SPNCAP Side Impact

NHTSA No.: M20244211
 Test Date: 6/12/2024



VEHICLE DAMAGE PROFILE DISTANCES

DPD	Distance From Impact Point (mm)	Level	Post-Test (mm)	Pre-Test (mm)	Crush (mm)
1	1500	4	827	832	5
2	1050	4	816	834	18
3	600	2	790	871	81
4	150	3	596	881	285
5	-150	3	672	883	211
6 ¹	-600	3	891	894	0

¹ DPD 6 is defined as zero crush since the crush does not extend to the end of the vehicle.

DATA SHEET NO. 12

FMVSS NO. 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

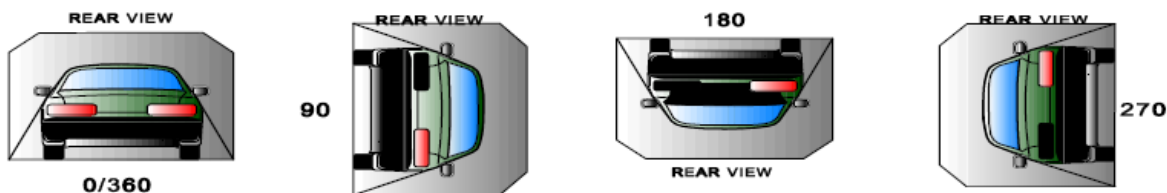
Test Vehicle: 2024 Kia Seltos SUV
 Test Program: SPNCAP Side Impact

NHTSA No.: M20244211
 Test Date: 6/12/2024

Test Time: 17:30 Temperature: 21.4°C

- A. From impact until vehicle motion ceases: 0 oz.
 (Maximum allowable is 1 ounce)
- B. For the 5 minute period after motion ceases: 0 oz.
 (Maximum allowable is 5 ounces)
- C. For the following 25 minutes: 0 oz.
 (Maximum allowable is 1 ounce/minute)
- D. Spillage Details: None

FMVSS 301 STATIC ROLLOVER DATA



ROLLOVER SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0 to 90	90	330	420
90 to 180	90	330	840
180 to 270	90	330	1260
270 to 360	90	330	1680

FMVSS NO. 301 ROLLOVER SPILLAGE TABLE

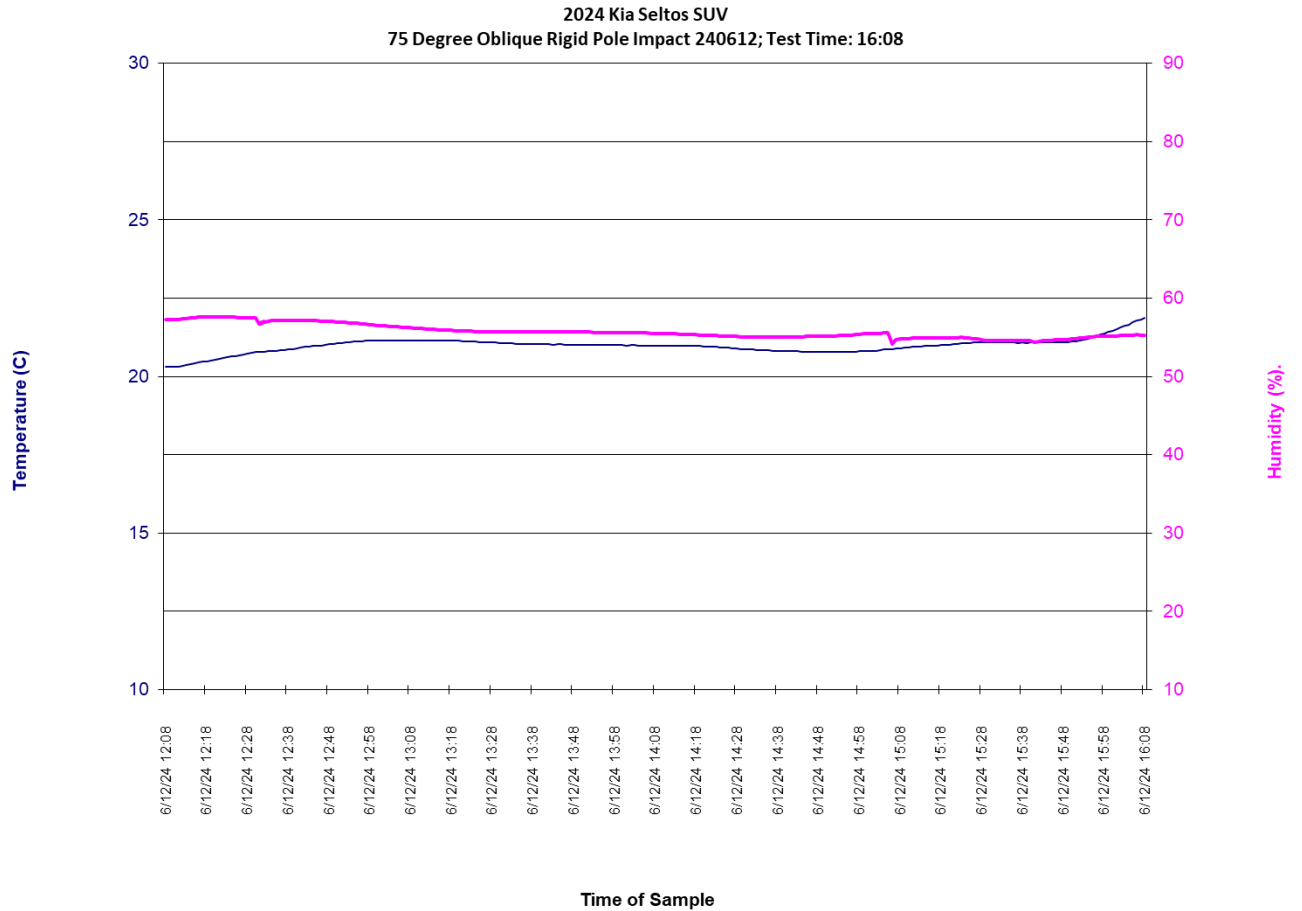
Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0 to 90	0	0	0	0
90 to 180	0	0	0	0
180 to 270	0	0	0	0
270 to 360	0	0	0	0

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: 2024 Kia Seltos SUV NHTSA No.: M20244211
Test Program: SPNCAP Side Impact Test Date: 6/12/2024



APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

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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
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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
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17	Pre-Test Left Side View of Pole Positioned Against Side of Vehicle	A-12
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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-16
25	Post-Test Left Side View of Dummy Shoulder and Door Top View	A-16
26	Pre-Test Front View of Seat Back Prior to Dummy Positioning	A-17
27	Pre-Test Front Close-Up View of Dummy Head and Shoulders in Relation to Head Restraint	A-17
28	Pre-Test Front View of Seat Pan Prior to Dummy Positioning	A-18
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-19
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32	Pre-Test Placement of Dummy's Feet	A-20
33	Pre-Test View of Belt Anchorage for Dummy	A-20
34	Pre-Test Left Side View of Steering Wheel	A-21
35	Pre-Test View of Disengaged Parking Brake	A-21

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38	Pre-Test Close-Up Left Side View of Driver Seat Back	A-23
39	Pre-Test Close-Up View of Driver Seat Back or Head Restraint	A-23
40	Pre-Test Dummy and Door Clearance View	A-24
41	Post-Test Dummy and Door Clearance View	A-24
42	Pre-Test Right Side View of Dummy and Front Seat of Occupant Compartment	A-25
43	Post-Test Right Side View of Dummy and Front Seat of Occupant Compartment	A-25
44	Pre-Test Inner Driver Door Panel View	A-26
45	Post-Test Inner Driver Door Panel View Showing Dummy Contact Location	A-26
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47	Post-Test Dummy Close-Up Head Contact with Side Airbag View	A-28
48	Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View	A-28
49	Post-Test Dummy Close-Up Torso Contact with Side Airbag View	A-29
50	Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View	A-29
51	Post-Test Dummy Close-Up Pelvis Contact with Side Airbag View	A-30
52	Post-Test Dummy Close-Up Knee Contact with Vehicle Interior View	A-30
53	Post-Test Right Side View of Dummy and Rear Seat of Occupant Compartment	A-31
54	Post-Test Inner Rear Passenger Torso Air Bag Deployment View	A-31
55	Pre-Test View of Fuel Filler Cap or Fuel Filler Neck	A-32
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58	Close-Up View of Vehicle's Tire Information Placard or Label	A-33
59	Pre-Test Pole Barrier Front View	A-34
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63	Pre-Test Ballast View	A-36
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66	FMVSS No. 301 Static Rollover 90 Degrees	A-37
67	FMVSS No. 301 Static Rollover 180 Degrees	A-38
68	FMVSS No. 301 Static Rollover 270 Degrees	A-38
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70	Impact Event	A-39
71	Monroney Label	A-40
72	Head Restraint Use and Adjustment Information from Vehicle Owner's Manual	A-40
73	Post-Test View of Shattered Vehicle Inner Door Panel	A-41



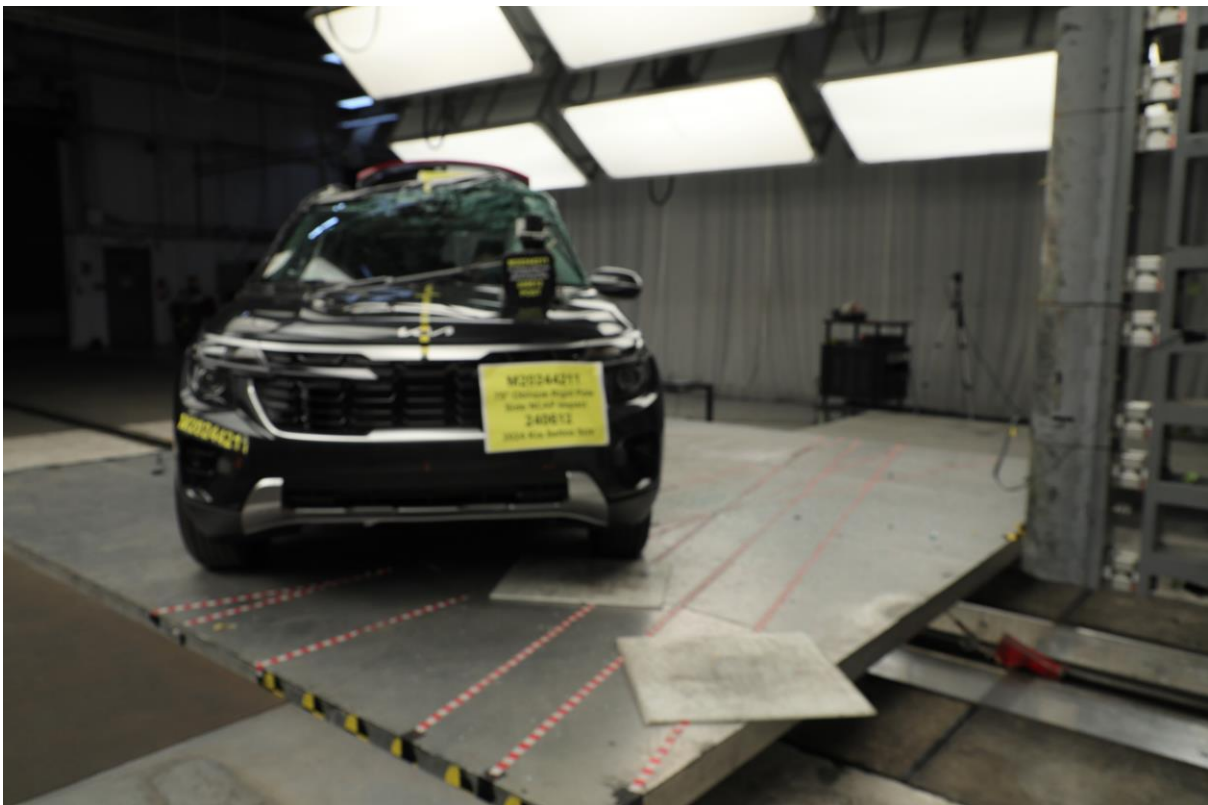
No. 001 As Delivered Right Front $\frac{3}{4}$ View of Test Vehicle



No. 002 As Delivered Left Rear $\frac{3}{4}$ View of Test Vehicle



No. 003 Pre-Test Frontal View of Test Vehicle



No. 004 Post-Test Frontal View of Test Vehicle



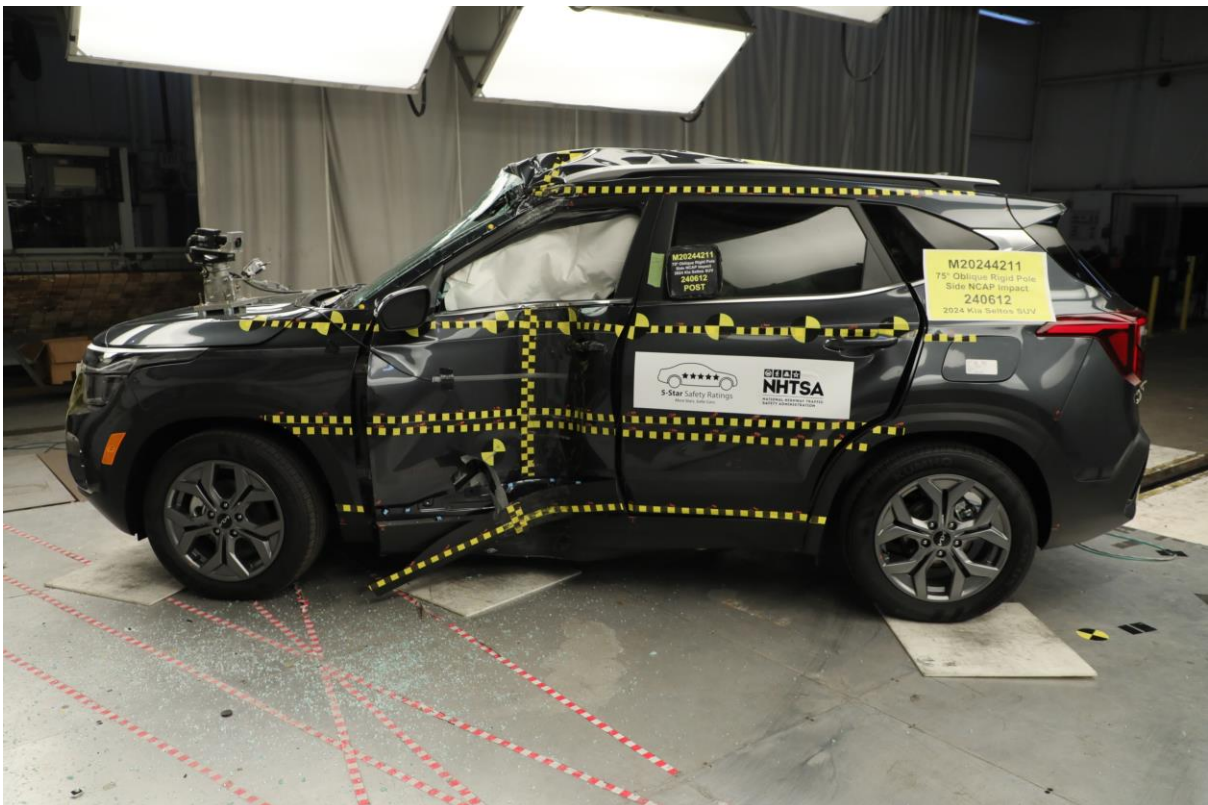
No. 005 Pre-Test Left Front $\frac{3}{4}$ View of Test Vehicle



No. 006 Post-Test Left Front $\frac{3}{4}$ View of Test Vehicle



No. 007 Pre-Test Left Side View of Test Vehicle



No. 008 Post-Test Left Side View of Test Vehicle



No. 009 Pre-Test Left Rear $\frac{3}{4}$ View of Test Vehicle



No. 010 Post-Test Left Rear $\frac{3}{4}$ View of Test Vehicle



No. 011 Pre-Test Rear View of Test Vehicle



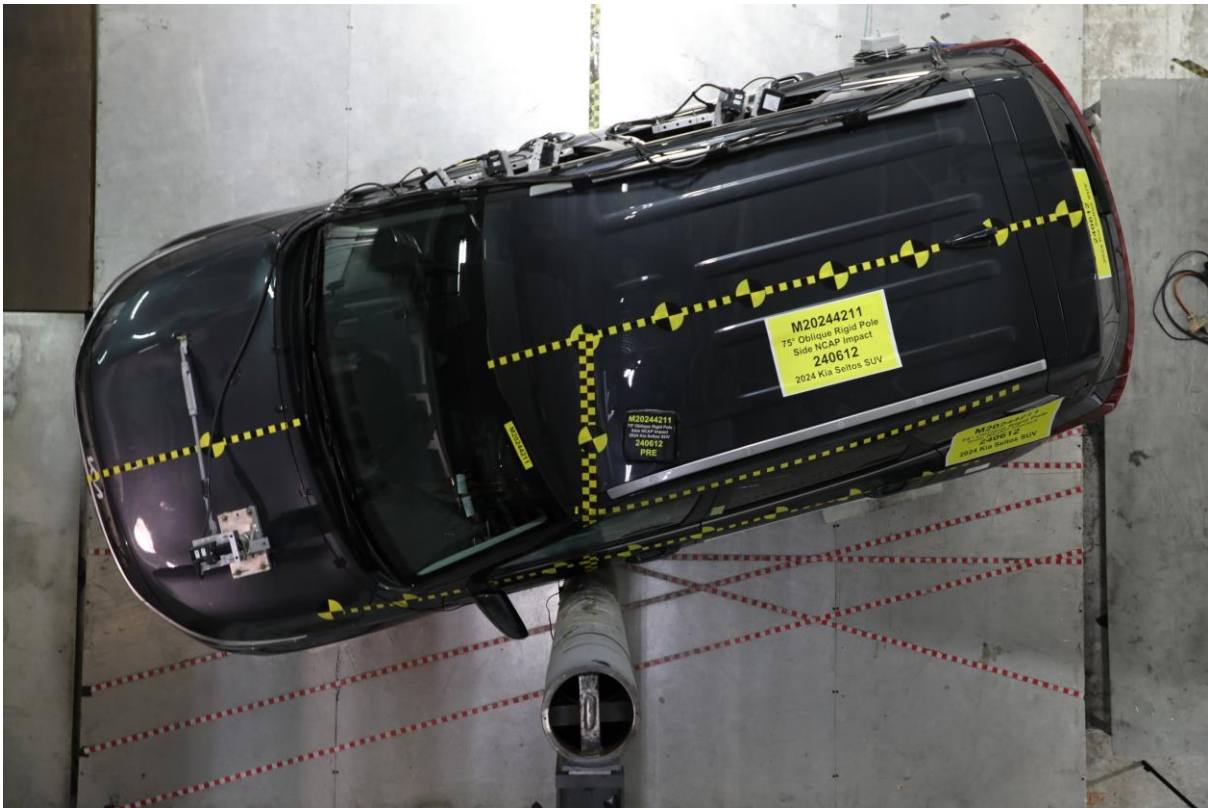
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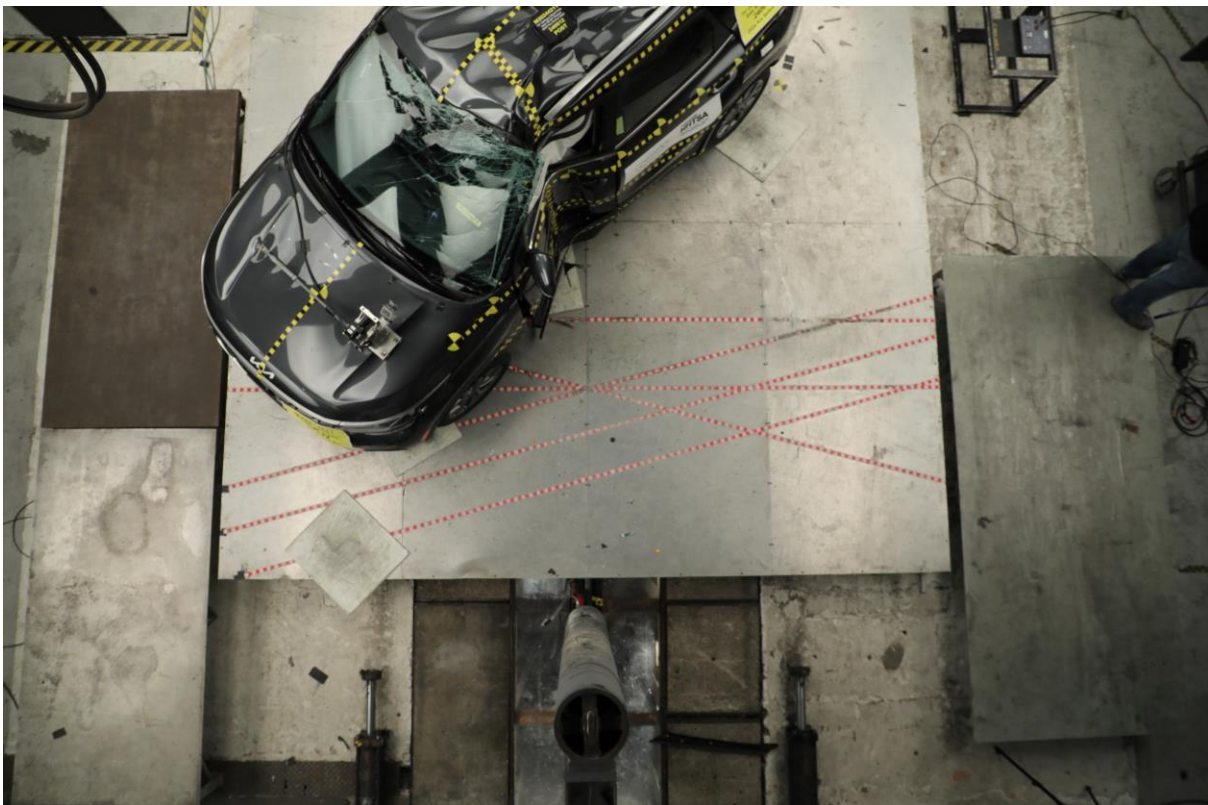
No. 013 Pre-Test Right Side View of Test Vehicle



No. 014 Post-Test Right Side View of Test Vehicle



No. 015 Pre-Test Overhead View of Test Area



No. 016 Post-Test Overhead View of Test Area



No. 017 Pre-Test Left Side View of Pole Positioned Against Side of Vehicle



No. 018 Pre-Test Right Side View of Pole Positioned Against Side of Vehicle



No. 019 Pre-Test Close-Up View of Impact Point Target



No. 020 Post-Test Close-Up View of Impact Point Target Showing Impact Location



No. 021 Pre-Test Front Close-Up View of Dummy Head and Chest



No. 022 Post-Test Front Close-Up View of Dummy



No. 023 Pre-Test Left Side View of Dummy Showing Belt and Chalking

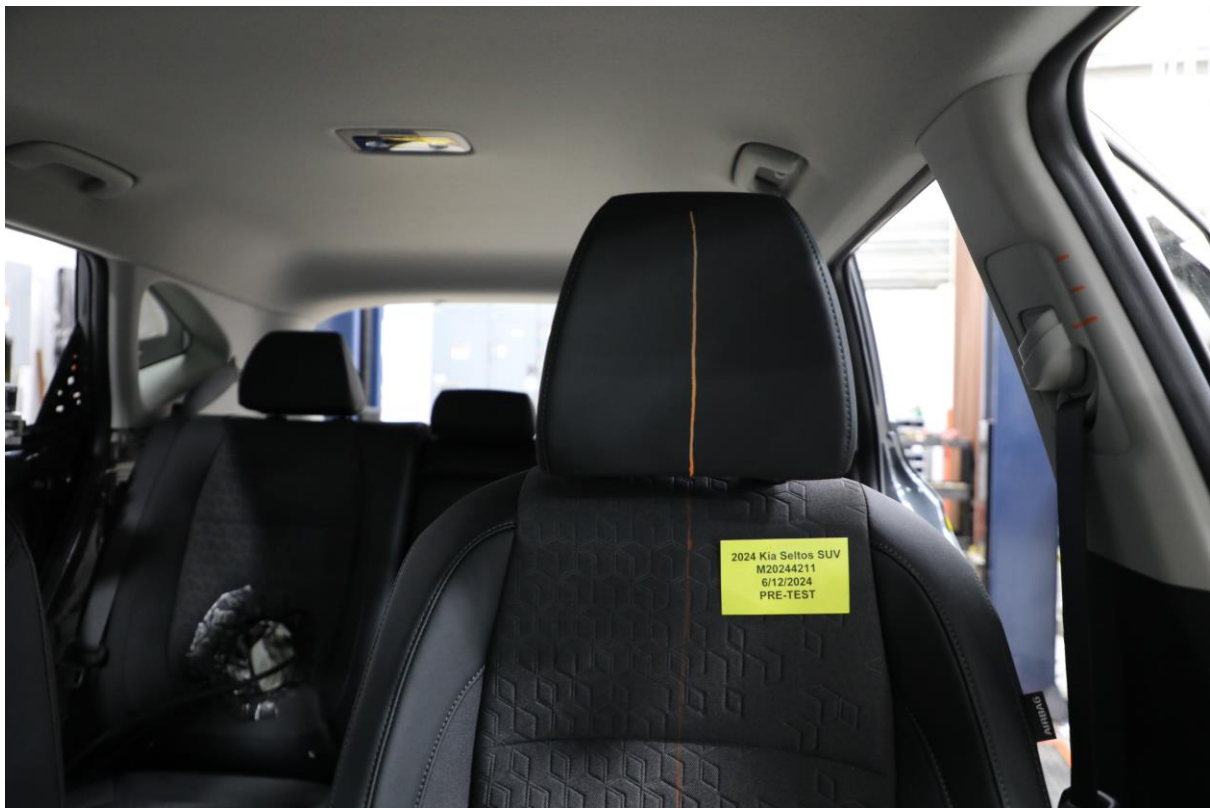
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No. 024 Pre-Test Left Side View of Dummy Shoulder and Door Top View



No. 025 Post-Test Left Side View of Dummy Shoulder and Door Top View



No. 026 Pre-Test Front View of Seat Back Prior to Dummy Positioning



No. 027 Pre-Test Front Close-Up View of Dummy Head and Shoulders in Relation to Head Restraint



No. 028 Pre-Test Front View of Seat Pan Prior to Dummy Positioning



No. 029 Pre-Test Overhead View of Dummy Thighs on Seat Pan



No. 030 Pre-Test Left Side View of Dummy Neck Showing Position of Adjustable Neck Bracket



No. 031 Pre-Test Left Side View of Dummy Head Showing Dummy Head is Level



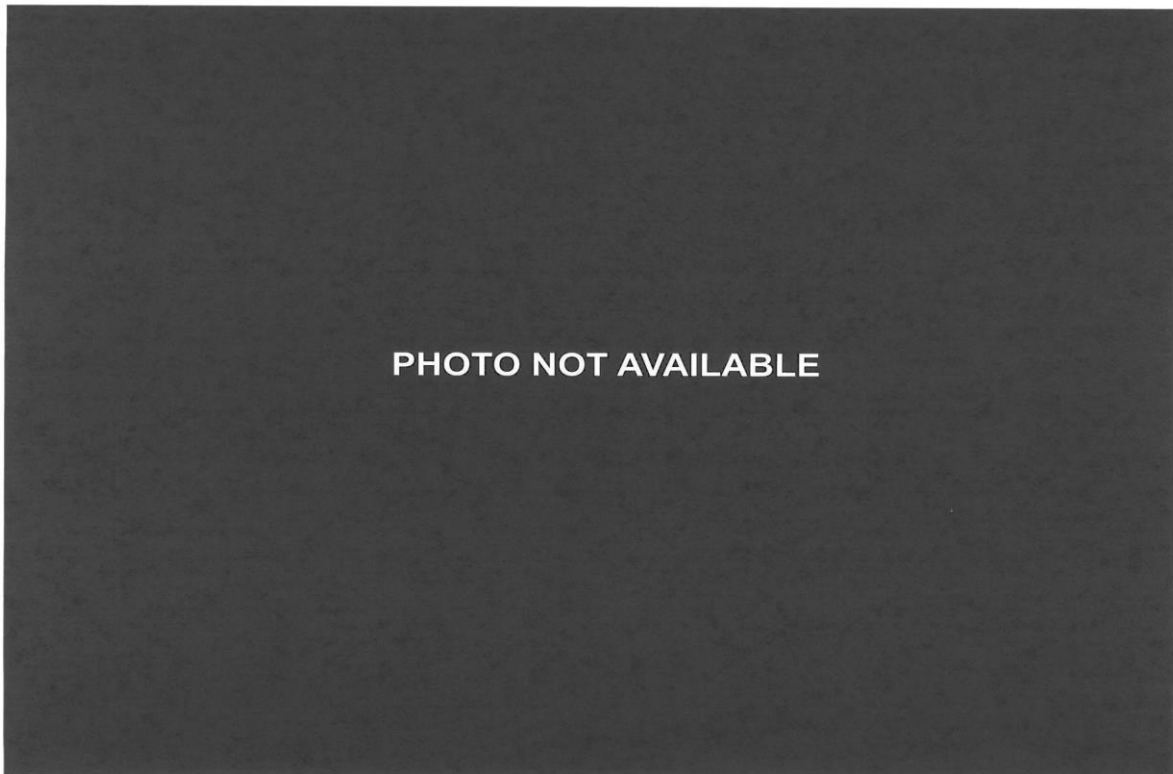
No. 032 Pre-Test Placement of Dummy Feet



No. 033 Pre-Test View of Belt Anchorage for Dummy



No. 034 Pre-Test Left Side View of Steering Wheel



No. 035 Pre-Test View of Disengaged Parking Brake



No. 036 Pre-Test View of Parking Brake



No. 037 Pre-Test Close-Up Left Side View of Driver Seat Track



No. 038 Pre-Test Close-Up Left Side View of Driver Seat Back



No. 039 Pre-Test Close-Up View of Driver Seat Back or Head Restraint



No. 040 Pre-Test Dummy and Door Clearance View



No. 041 Post-Test Dummy and Door Clearance View



No. 042 Pre-Test Right Side View of Dummy and Front Seat of Occupant Compartment



No. 043 Post-Test Right Side View of Dummy and Front Seat of Occupant Compartment



No. 044 Pre-Test Inner Door Panel View



No. 045 Post-Test Inner Door Panel View Showing Dummy Contact Location



No. 046 Post-Test Dummy Close-Up Head Contact with Vehicle Interior View

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No. 047 Post-Test Dummy Close-Up Head Contact with Side Airbag View



No. 048 Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View



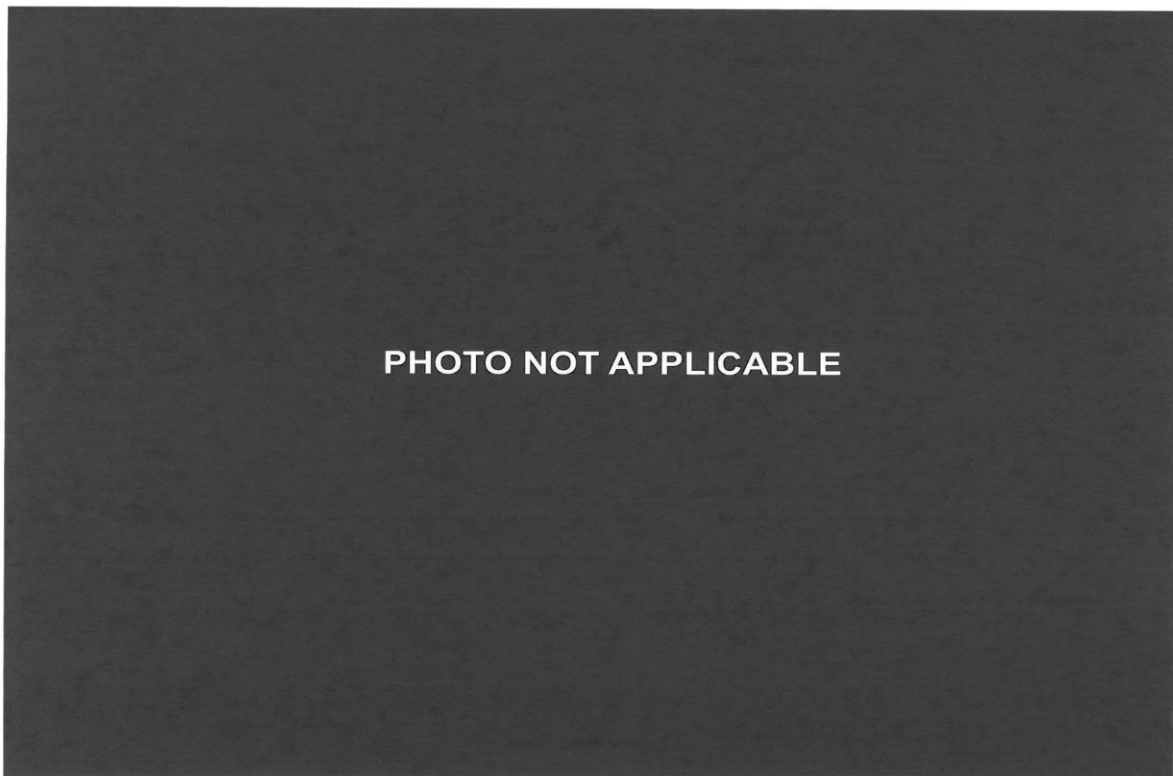
No. 049 Post-Test Dummy Close-Up Torso Contact with Side Airbag View



No. 050 Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View



No. 051 Post-Test Dummy Close-Up Pelvis Contact with Side Airbag View



No. 052 Post-Test Dummy Close-Up Knee Contact with Vehicle Interior View

PHOTO NOT AVAILABLE

**No. 053 Post-Test Right Side View of Dummy and Rear Seat of Occupant
Compartment**

PHOTO NOT APPLICABLE

No. 054 Post-Test Inner Rear Passenger Torso Air Bag Deployment View



No. 055 Pre-Test View of Fuel Filler Cap or Fuel Filler Neck



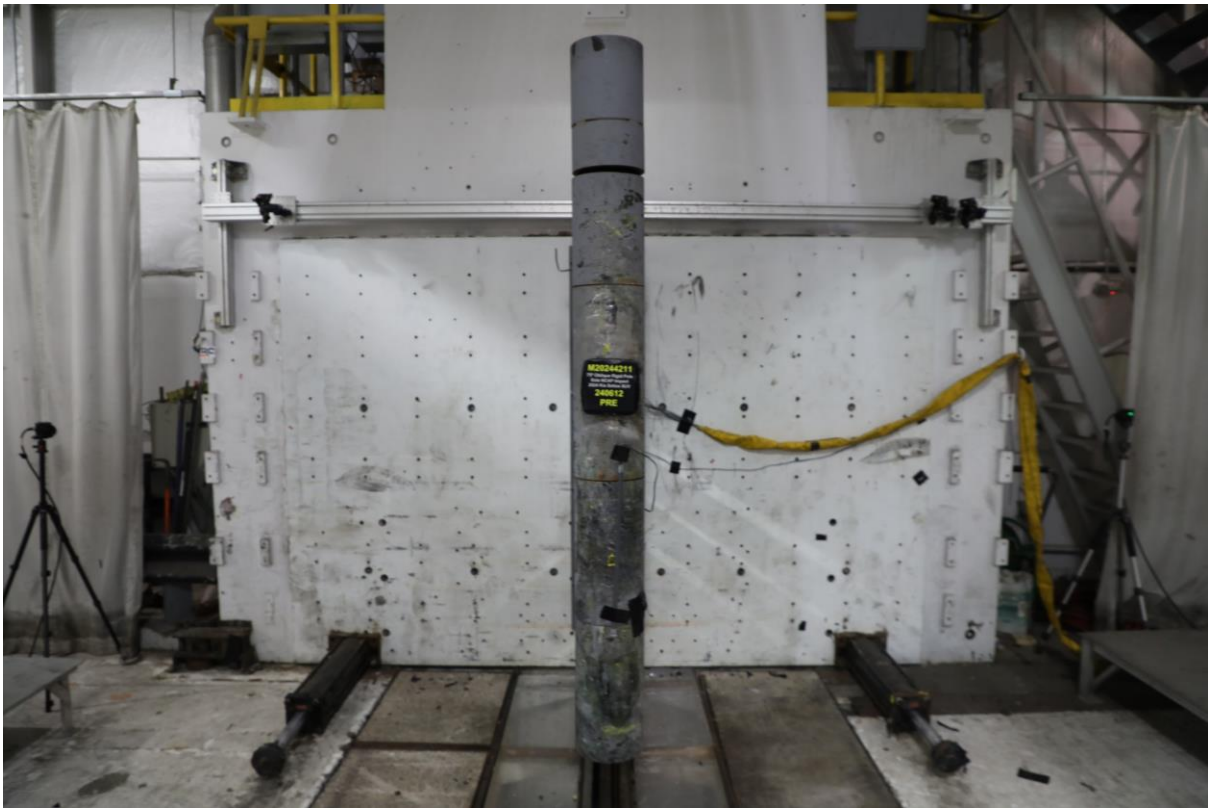
No. 056 Post-Test View of Fuel Filler Cap or Fuel Filler Neck



No. 057 Close-Up View of Vehicle Certification Label



No. 058 Close-Up View of Vehicle Tire Information Placard or Label



No. 059 Pre-Test Pole Barrier Front View



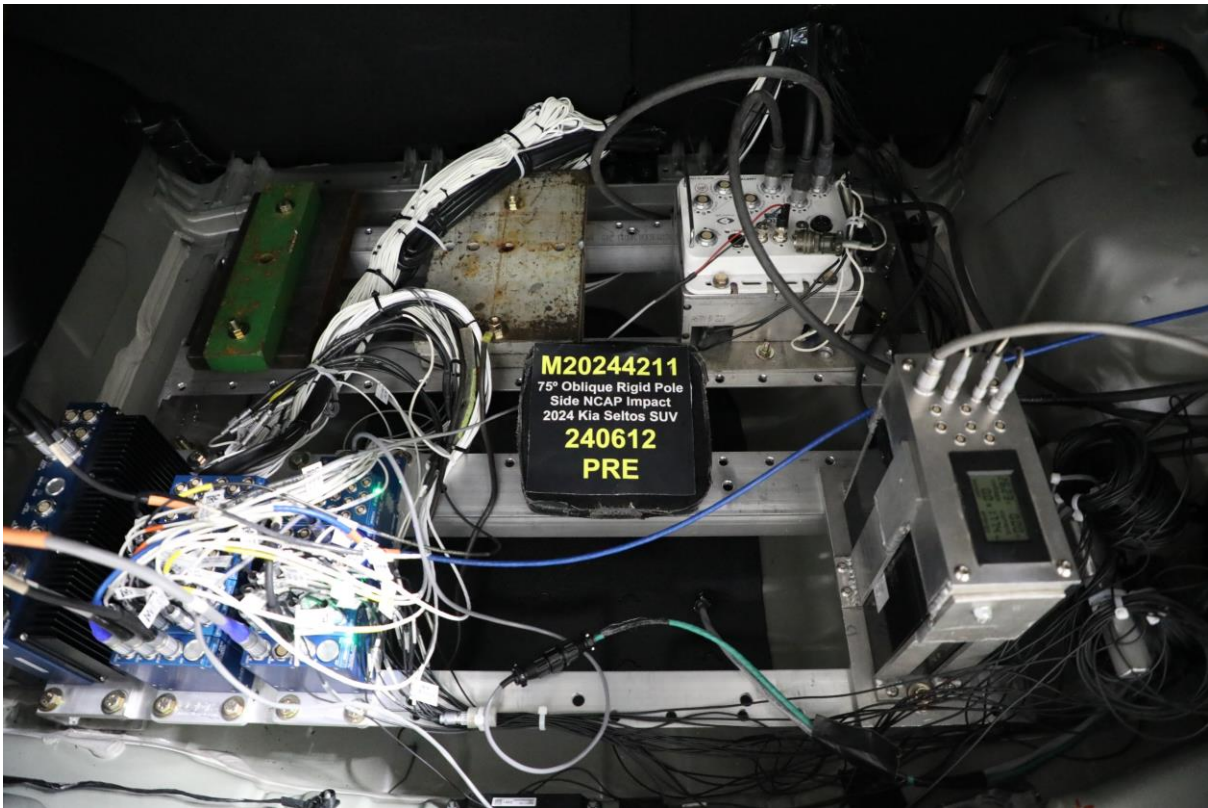
No. 060 Post-Test Pole Barrier Front View



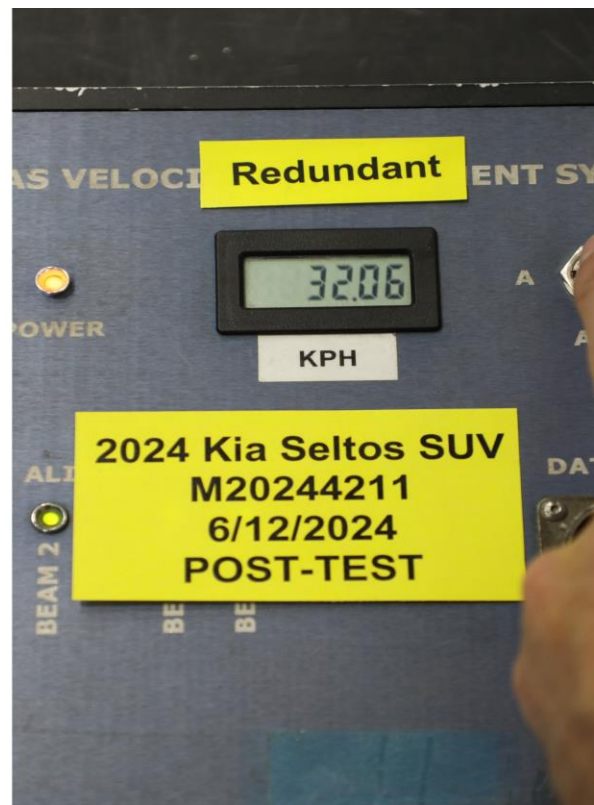
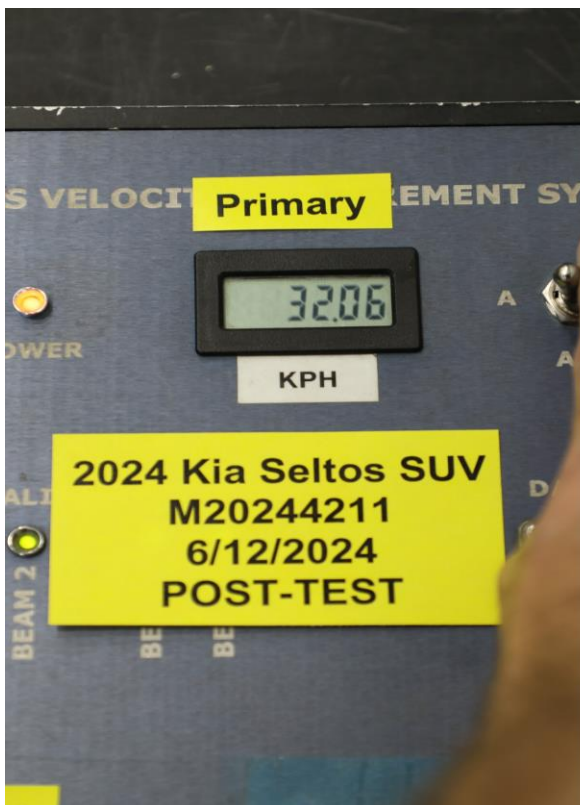
No. 061 Pre-Test Pole Barrier Side View



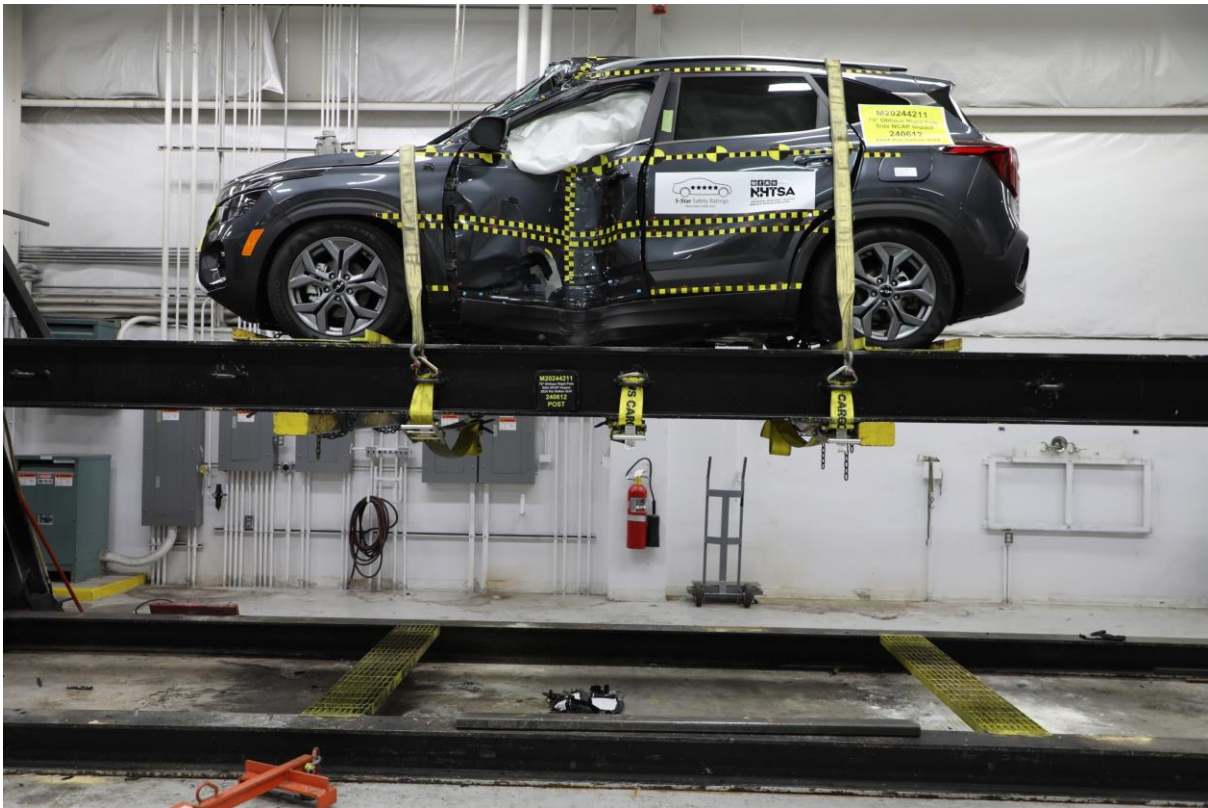
No. 062 Post-Test Pole Barrier Side View



No. 063 Pre-Test Ballast View



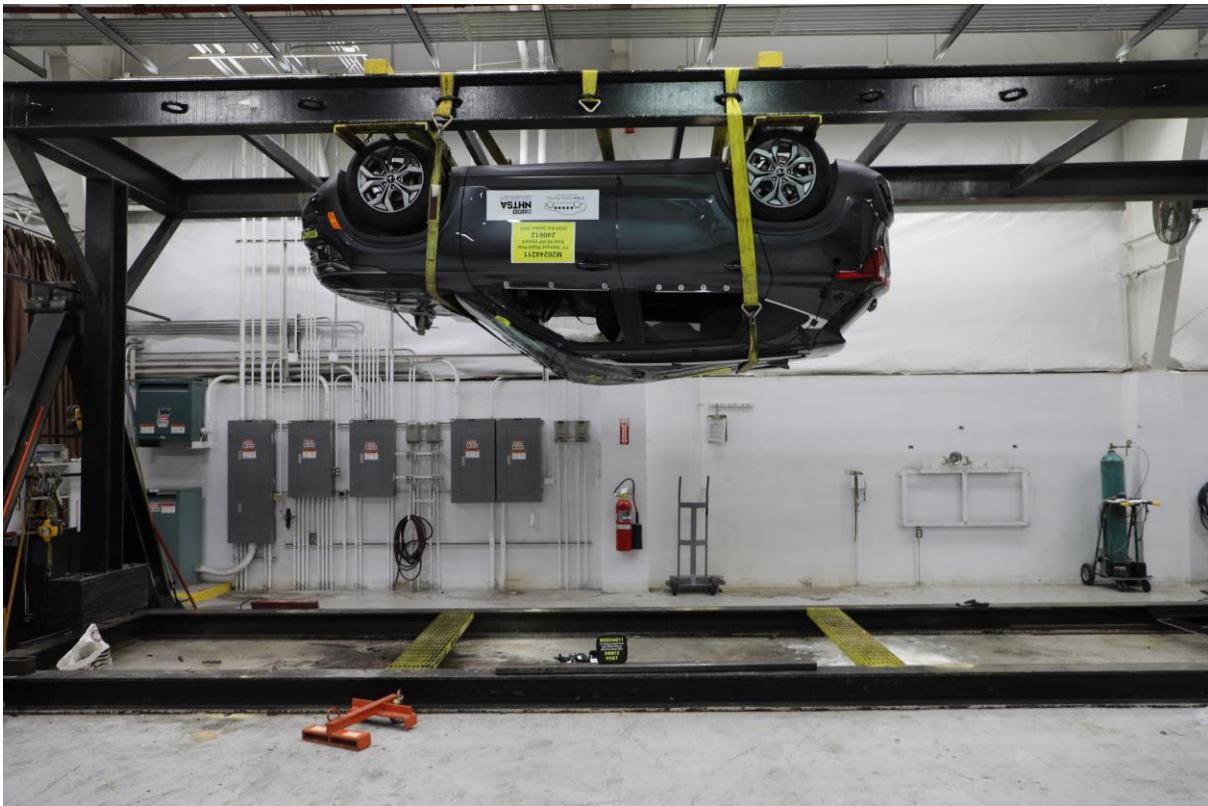
No. 064 Post-Test Primary and Redundant Speed Trap Read Out



No. 065 FMVSS No. 301 Static Rollover 0 Degrees



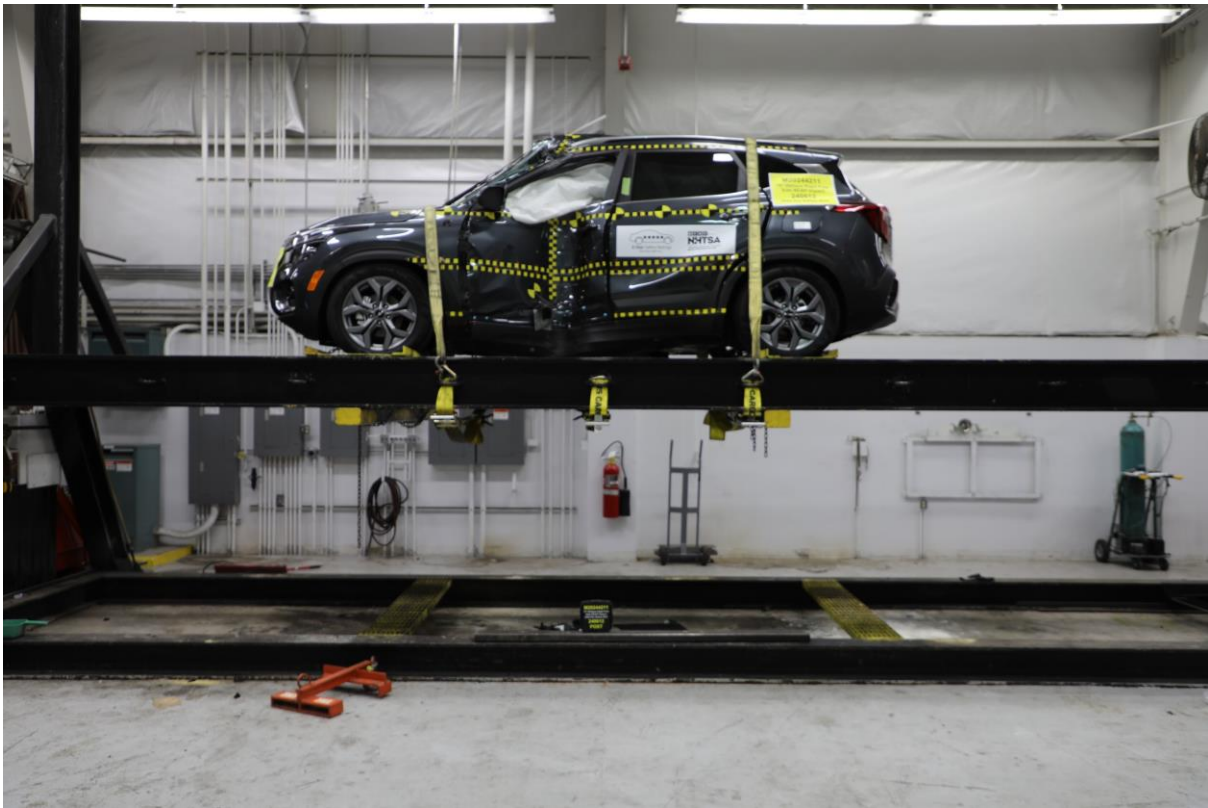
No. 066 FMVSS No. 301 Static Rollover 90 Degrees



No. 067 FMVSS No. 301 Static Rollover 180 Degrees



No. 068 FMVSS No. 301 Static Rollover 270 Degrees



No. 069 FMVSS No. 301 Static Rollover 360 Degrees



No. 070 Impact Event

PHOTO NOT APPLICABLE

No. 073 Post-Test View of Shattered Vehicle Inner Door Panel

APPENDIX B
VEHICLE AND DUMMY RESPONSE DATA PLOTS

TABLE OF DATA PLOTS

No.	Description	Page
1	Driver Head Acceleration (X) vs. Time	B-4
2	Driver Head Acceleration (Y) vs. Time	B-4
3	Driver Head Acceleration (Z) vs. Time	B-4
4	Driver Head Acceleration Resultant 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 Acceleration Resultant 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

Driver Head Acceleration (X) Redundant
 Driver Head Acceleration (Y) Redundant
 Driver Head Acceleration (Z) Redundant
 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)
 Driver Head Angular Velocity (X)
 Driver Head Angular Velocity (Y)
 Driver Head Angular Velocity (Z)

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

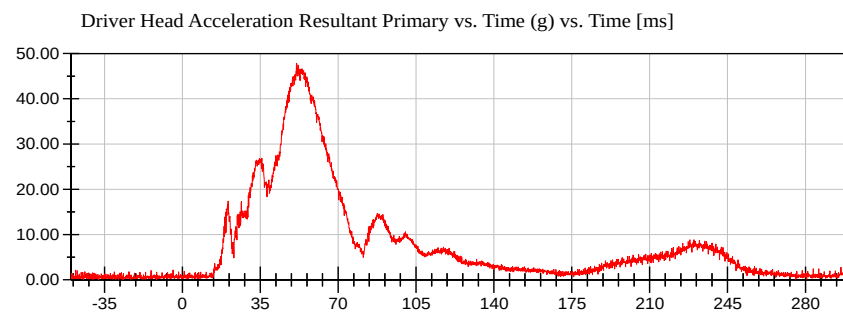
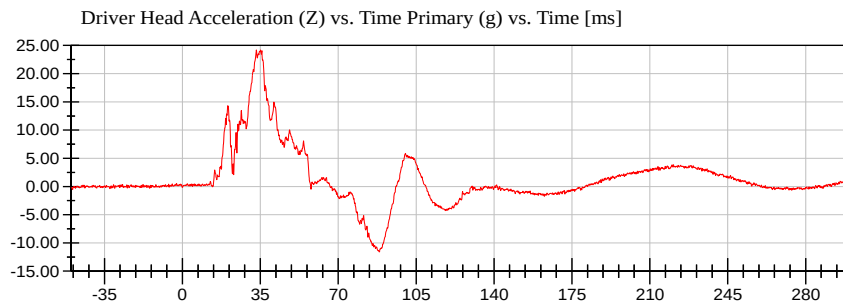
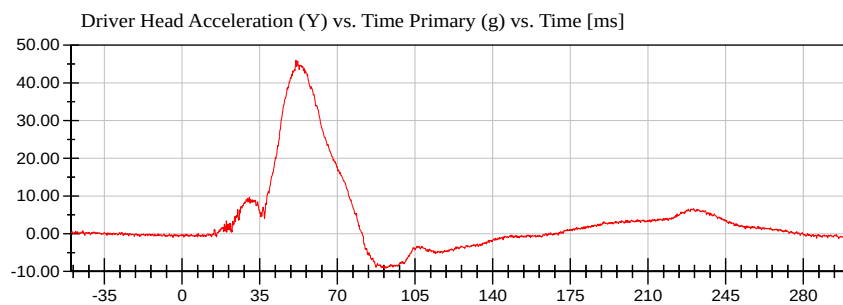
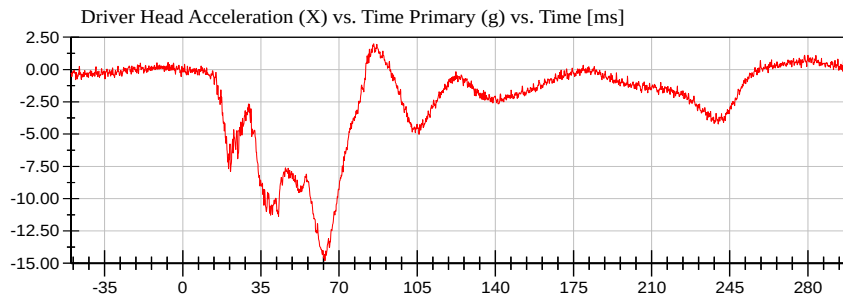
NHTSA

Test Lab: CTF

Test Number: 240612 (M20244211)

Position #1 SID IIs Dummy (297)

Test Date: 06/12/2024



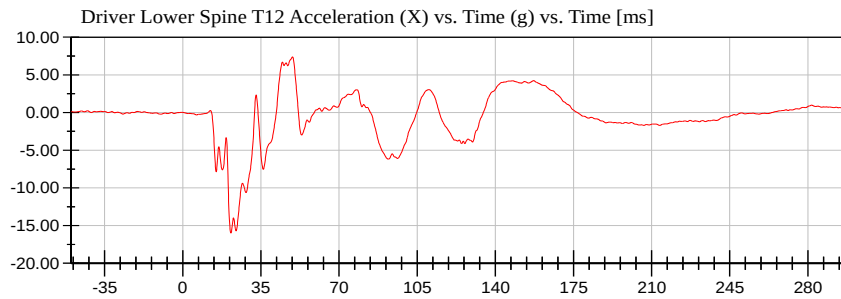
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Test Lab: CTF

Test Number: 240612 (M20244211)

Position #1 SID II's Dummy (297)

Test Date: 06/12/2024



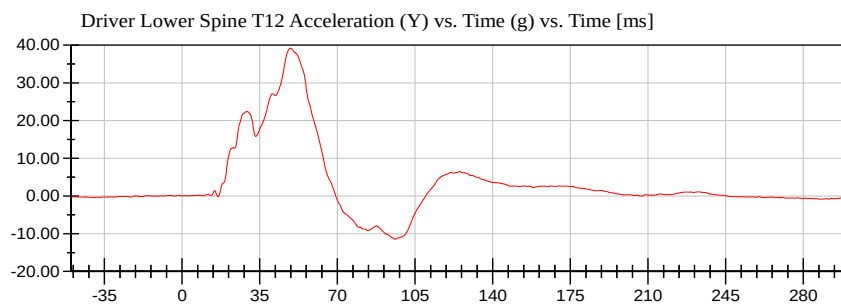
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-15.99 g at 21.60 ms

CFC_180



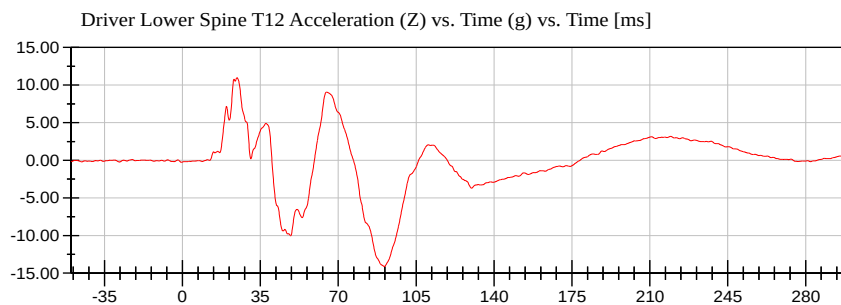
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39.19 g at 48.80 ms

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-11.44 g at 96.08 ms

CFC_180



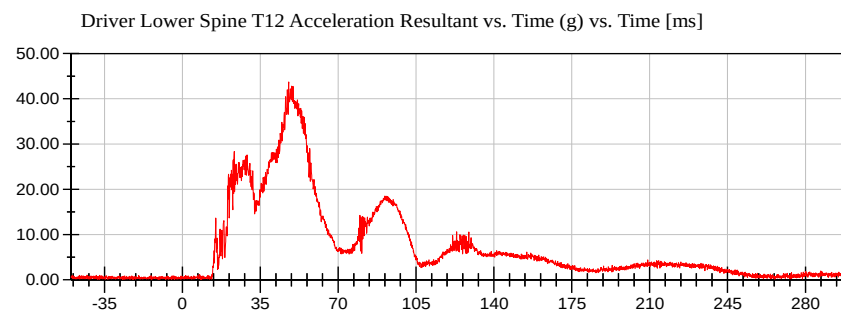
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<Min>

-14.11 g at 90.72 ms

CFC_180



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<Min>

0.05 g at -4.88 ms

Prefiltered_> CFC 1000



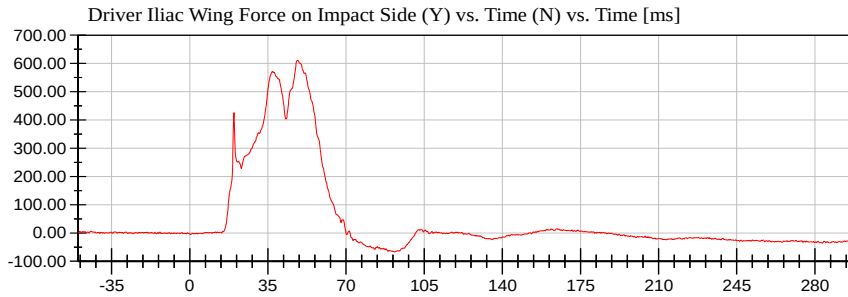
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Test Lab: CTF

Test Number: 240612 (M20244211)

Position #1 SID IIs Dummy (297)

Test Date: 06/12/2024



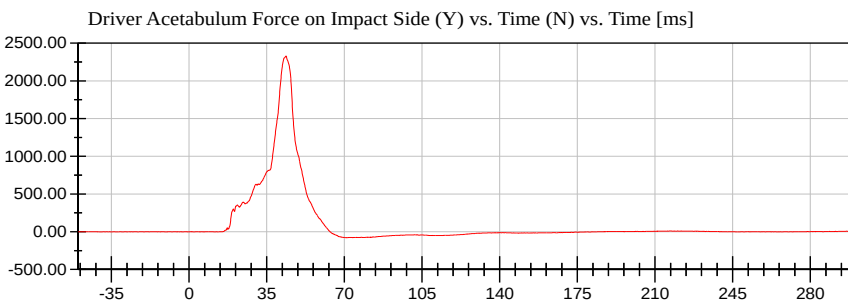
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-67.70 N at 91.68 ms

CFC_600



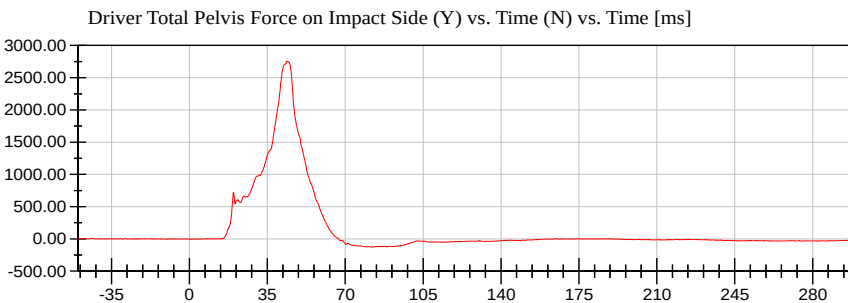
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2,328.56 N at 43.68 ms

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-79.50 N at 70.96 ms

CFC_600



<Max>

2,755.99 N at 43.84 ms

<Min>

-126.55 N at 82.72 ms

CFC_600



APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

TABLE OF CALIBRATION MEASUREMENTS AND PLOTS
SID-IIs (Driver) Dummy
Description

Table 1. External Measurements

Table 2. Head Drop Test

Resultant Head Acceleration (G's) vs. Time (ms)
Head (X) Acceleration (G's) vs. Time (ms)
Head (Y) Acceleration (G's) vs. Time (ms)
Head (Z) Acceleration (G's) vs. Time (ms)

Table 3. Lateral Neck Pendulum Test

Pendulum Velocity (m/s) vs. Time (ms)
Flexion Angle (°) vs. Time (ms)
Moment About Occipital Condyle (Nm) vs. Time (ms)

Table 4. Shoulder Impact Test

Impactor Acceleration (G's) vs. Time (ms)
Shoulder Displacement (mm) vs. Time (ms)
Upper Spine Acceleration (G's) vs. Time (ms)

Table 5. Thorax (With Arm) Impact Test

Impactor Acceleration (G's) vs. Time (ms)
Shoulder Displacement (mm) vs. Time (ms)
Upper Rib Displacement (mm) vs. Time (ms)
Middle Rib Displacement (mm) vs. Time (ms)
Lower Rib Displacement (mm) vs. Time (ms)
Upper Spine Acceleration (G's) vs. Time (ms)
Lower Spine Acceleration (G's) vs. Time (ms)

Table 6. Thorax (Without Arm) Impact Test

Impactor Acceleration (G's) vs. Time (ms)
Upper Rib Displacement (mm) vs. Time (ms)
Middle Rib Displacement (mm) vs. Time (ms)
Lower Rib Displacement (mm) vs. Time (ms)
Upper Spine Acceleration (G's) vs. Time (ms)
Lower Spine Acceleration (G's) vs. Time (ms)

Table 7. Abdomen Impact Test

Impactor Acceleration (G's) vs. Time (ms)
Upper Abdominal Rib Displacement (mm) vs. Time (ms)
Lower Abdominal Rib Displacement (mm) vs. Time (ms)
Lower Spine Acceleration (G's) vs. Time (ms)

Table 8. Pelvis Plug Quasi-Static Test (Optional*)

Table 9. Pelvis Acetabulum Impact Test

Impactor Acceleration (G's) vs. Time (ms)
Pelvis (Y) Acceleration (G's) vs. Time (ms)
Acetabulum Force (N) vs. Time (ms)

Table 10. Pelvis Iliac Impact Test

Impactor Acceleration (G's) vs. Time (ms)
Pelvis (Y) Acceleration (G's) vs. Time (ms)
Iliac Force (N) vs. Time (ms)

Pre-Test Calibration Sheets
Driver S/N 297

Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. 297 Calibration No. 67

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	780	Yes
B	Shoulder Pivot Height	437.0 - 453.0	450	Yes
C	H-Point Height	79.0 - 89.0	85	Yes
D	H-Point from Seat Back	141.0 - 151.0	147	Yes
E	Shoulder Pivot from Backline	97.0 - 107.0	102	Yes
F	Thigh Clearance	119.0 - 135.0	130	Yes
G	Head Breadth	140.0 - 148.0	147	Yes
H	Head Back from Backline	40.0 - 46.0	45	Yes
I	Head Depth	178.0 - 188.0	183	Yes
J	Head Circumference	541.0 - 551.0	544	Yes
K	Buttock to Knee Length	514.0 - 540.0	528	Yes
L	Popliteal Height	343.0 - 369.0	353	Yes
M	Knee Pivot to Floor Height	393.0 - 409.0	400	Yes
N	Buttock Popliteal Length	416.0 - 442.0	430	Yes
O	Chest Depth without Jacket	195.0 - 211.0	200	Yes
P	Foot Length (right)	216.0 - 232.0	223	Yes
P	Foot Length (left)	216.0 - 232.0	223	Yes
Q	Hip Breadth	313.0 - 323.0	319	Yes
R	Arm Length	249.0 - 259.0	254	Yes
S	Knee Joint to seat Back	478.0 - 493.0	485	Yes
V	Shoulder Width (only one arm installed)	341.0 - 357.0	347	Yes
W	Foot Width (right)	78.0 - 94.0	85	Yes
W	Foot Width (left)	78.0 - 94.0	85	Yes
Y	Chest Circumference with Jacket	851.0 - 881.0	877	Yes
Z	Waist Circumference	761.0 - 791.0	781	Yes

Revised 9/29/2005

Report Number: 297_S2F67

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Transportation Research Center Inc.

Left Lateral Head Drop

SID IIs Serial No. 297 Certification No. 67-1

Test Date: 5/9/2024

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	60 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	125.9 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-1.8 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	< 15 %	1.31 %	Yes

Test meets specifications.

Condition: Used

Comments:

Head Skin S/N: 1330

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.09.2024 12:56:37 234

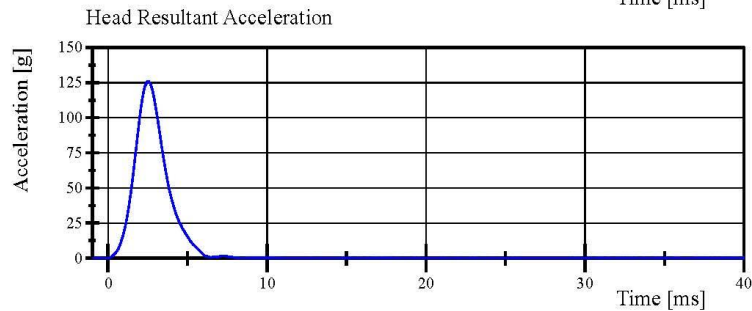
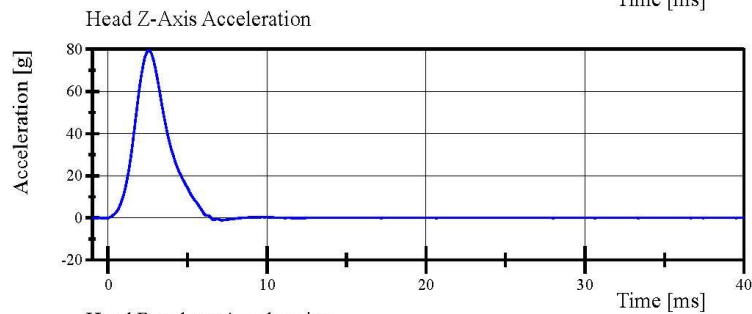
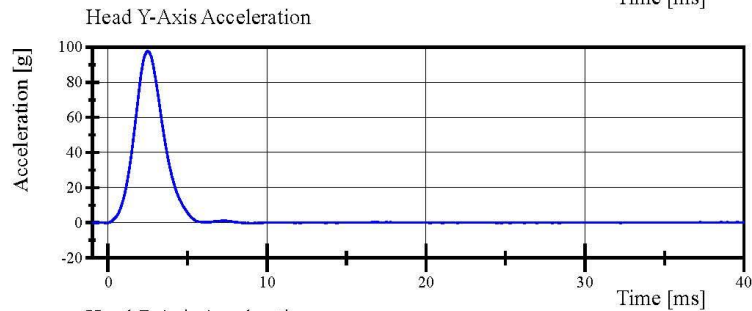
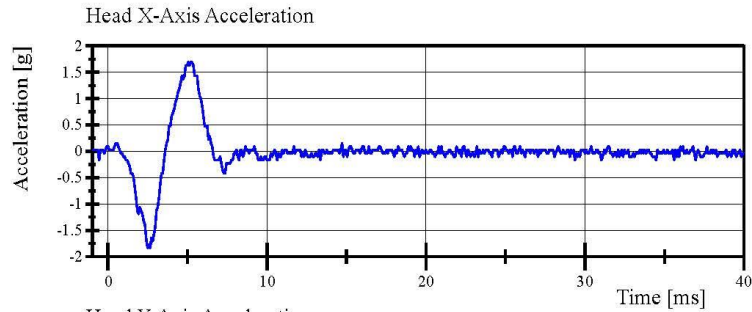


Transportation Research Center Inc.

Left Lateral Head Drop

SID IIs Serial No. 297 Certification No. 67-1

Test Date: 5/9/2024



Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.09.2024 12:57:07 234



Transportation Research Center Inc.

Left Lateral Neck

SID IIS Serial No. 297 Certification No. 67-1

Test Date: 5/9/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	62 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.617 m/s	Yes
Pendulum Integrated Velocity			
Change at 10 ms	2.20 - 2.80 m/s	2.295 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.336 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	4.511 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.515 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.800 m/s	Yes
Maximum Headform Flexion			
Peak	(-71) - (-81) deg	-77.9 deg	Yes
Time of Peak	50 - 70 ms	64.9 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	39.7 N·m	Yes
Decay to 0 N·m	102 - 126 ms	120.6 ms	Yes

Test meets specifications.

Condition: Used

Comments:

Neck S/N: 779

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.09.2024 13:43:21 753

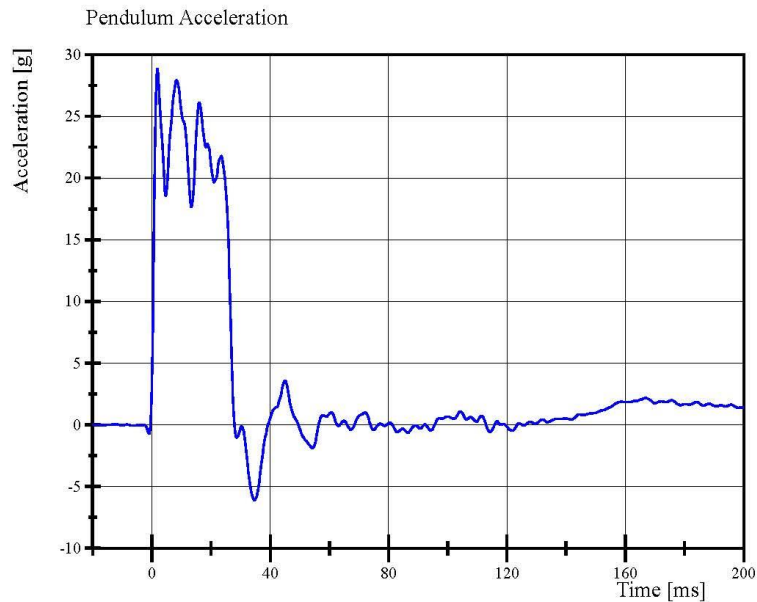


Transportation Research Center Inc.

Left Lateral Neck

SID IIS Serial No. 297 Certification No. 67-1

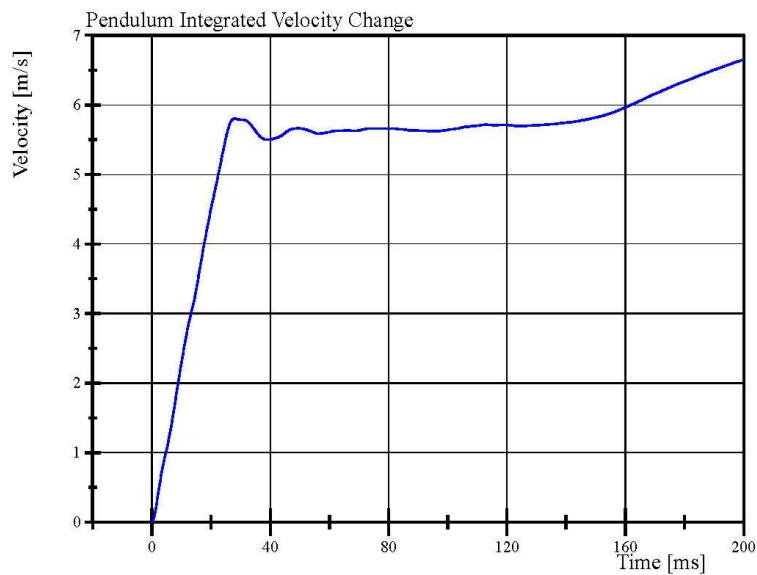
Test Date: 5/9/2024



Filter Class: CFC_180

Max: 28.9 g at 1.8 ms

Min: -6.1 g at 34.6 ms



Filter Class: CFC_180

Max: 6.7 m/s at 200.0 ms

Min: 0.0 m/s at 0.0 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.09.2024 13:43:49 753

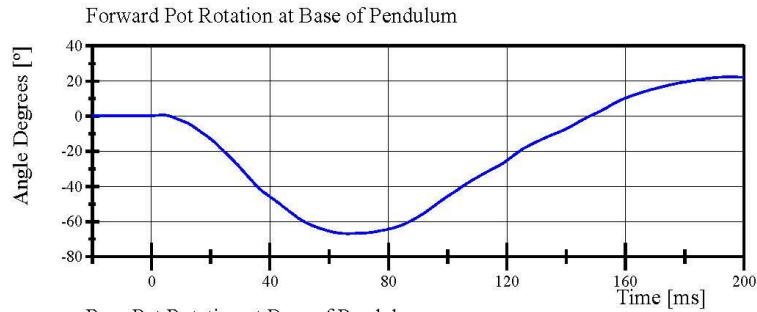


Transportation Research Center Inc.

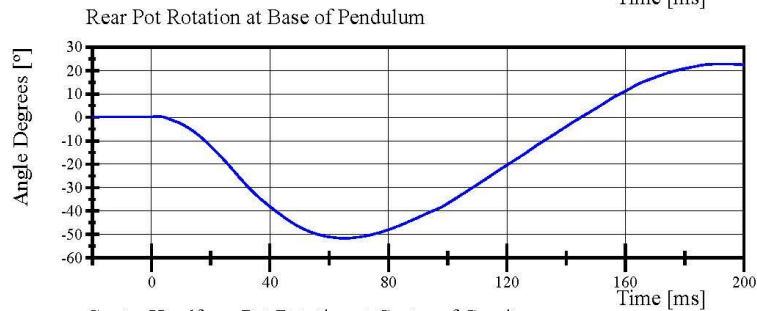
Left Lateral Neck

SID IIS Serial No. 297 Certification No. 67-1

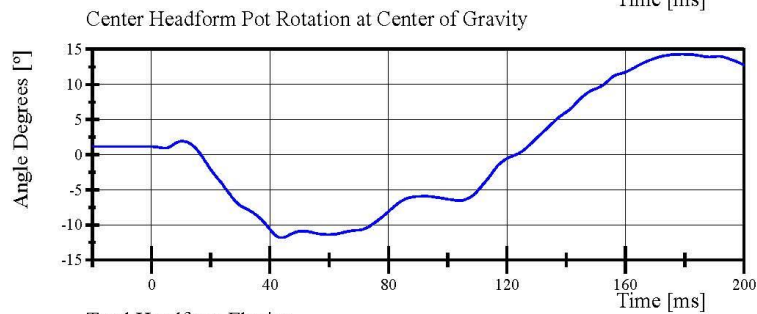
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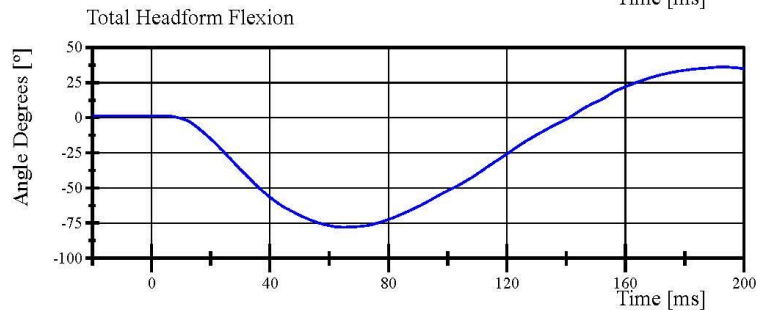
Filter Class: CFC_60
Max: 22.4 ° at 194.9 ms
Min: -66.9 ° at 66.3 ms



Filter Class: CFC_60
Max: 22.8 ° at 192.7 ms
Min: -51.6 ° at 65.0 ms



Filter Class: CFC_60
Max: 14.3 ° at 179.1 ms
Min: -11.8 ° at 43.8 ms



Filter Class: CFC_60
Max: 36.2 ° at 192.6 ms
Min: -77.9 ° at 64.9 ms

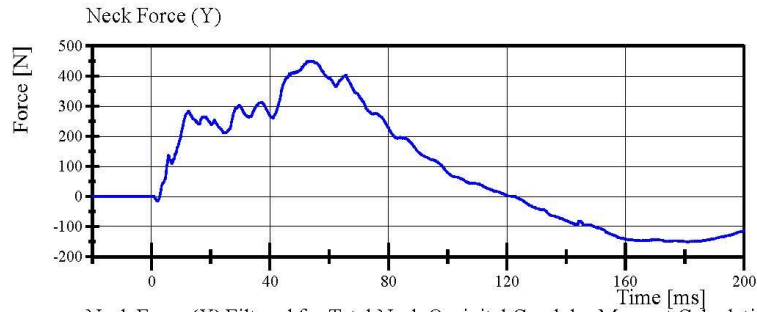
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with Polarity in accordance with J211

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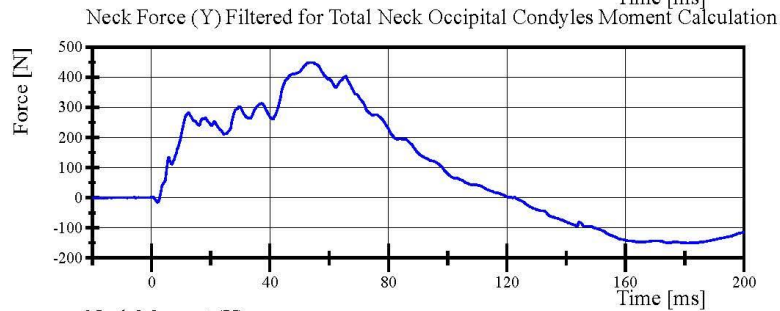


Transportation Research Center Inc.

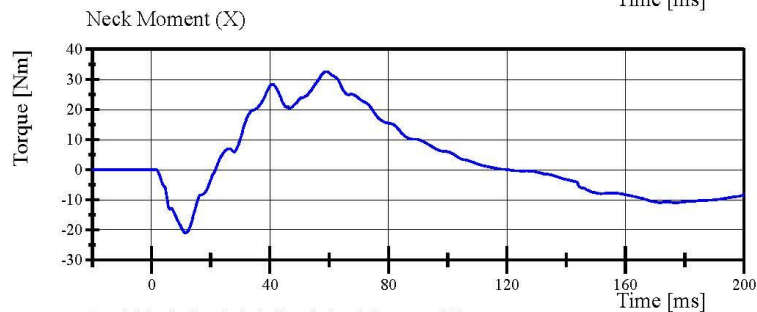
Left Lateral Neck
SID IIS Serial No. 297 Certification No. 67-1
Test Date: 5/9/2024



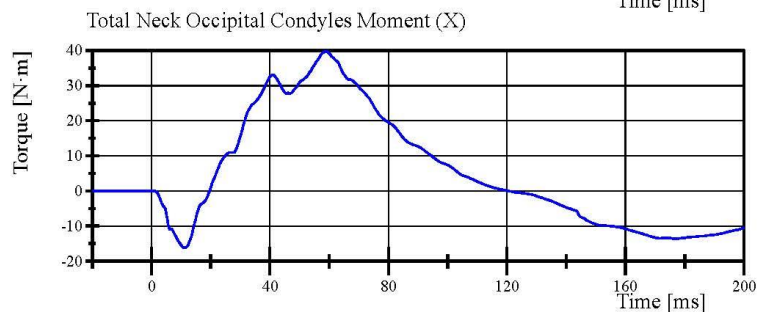
Filter Class: CFC_1000
Max: 449.8 N at 53.8 ms
Min: -151.2 N at 180.6 ms



Filter Class: CFC_600
Max: 449.4 N at 53.8 ms
Min: -150.8 N at 180.8 ms



Filter Class: CFC_600
Max: 32.6 Nm at 59.0 ms
Min: -20.9 Nm at 11.4 ms



Filter Class: Without_(Constar
Max: 39.7 N·m at 58.7 ms
Min: -16.3 N·m at 11.2 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.09.2024 13:43:50 753



Transportation Research Center Inc.

Left Lateral Shoulder
SID IIS Serial No. 297 Certification No. 67-1
Test Date: 5/9/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	61 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.27 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-15.0 g	Yes
Shoulder Displacement	28 - 37 mm	31.1 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	19.6 g	Yes

Test meets specifications.

Condition: Used

Comments:

Arm S/N: 940L

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.09.2024 14:42:54 852

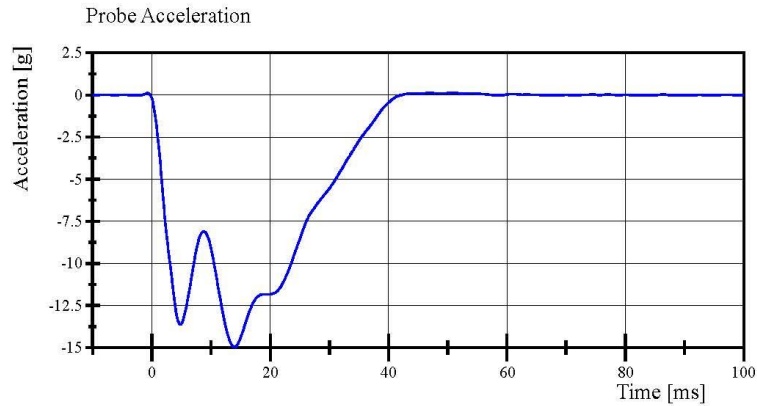


Transportation Research Center Inc.

Left Lateral Shoulder

SID IIs Serial No. 297 Certification No. 67-1

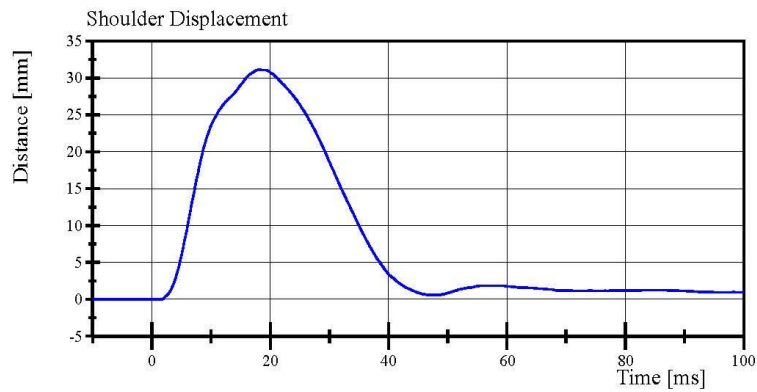
Test Date: 5/9/2024



Filter Class: CFC_180

Max: 0.1 g at 46.8 ms

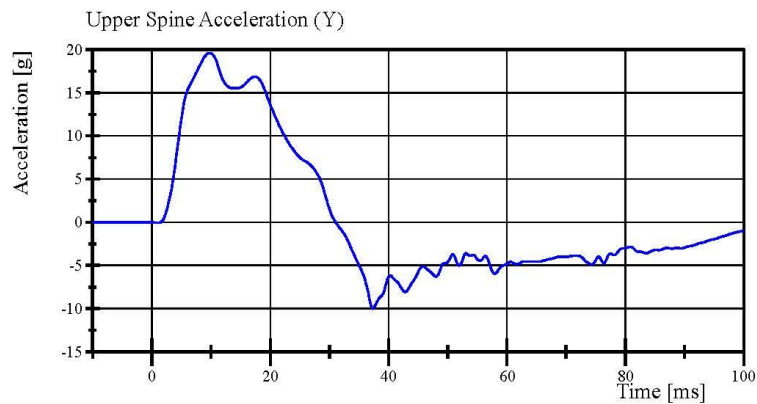
Min: -15.0 g at 13.9 ms



Filter Class: CFC_600

Max: 31.1 mm at 18.1 ms

Min: -0.0 mm at 1.5 ms



Filter Class: CFC_180

Max: 19.6 g at 9.8 ms

Min: -10.0 g at 37.4 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.09.2024 14:43:21 852



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIS Serial No. 297 Certification No. 67-1
Test Date: 5/9/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	61 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.720 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-34.5 g	Yes
Shoulder Displacement	31 - 40 mm	37.8 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	27.9 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	31.7 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	34.2 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	37.6 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	34.8 g	Yes

Test meets specifications.

Condition: Used

Comments:

Left Arm S/N: 940L

Shoulder Rib S/N: 180-3355 259

Upper Thorax Rib S/N: DM5020

Middle Thorax Rib S/N: DM5021

Lower Thorax Rib S/N: DM5022

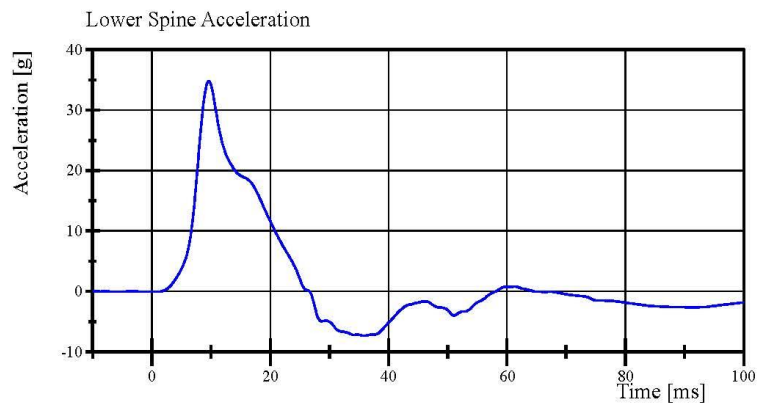
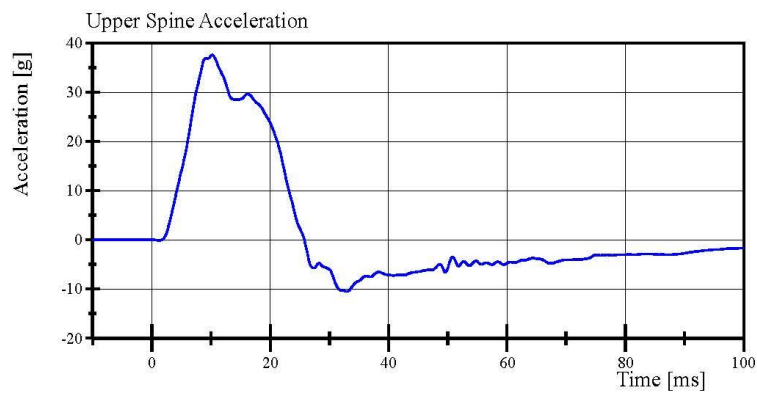
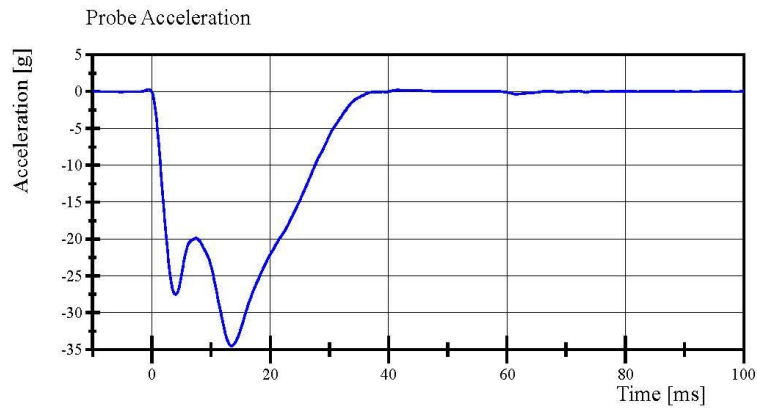
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with Polarity in accordance with J211

05.09.2024 15:29:10 612



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 297 Certification No. 67-1
Test Date: 5/9/2024



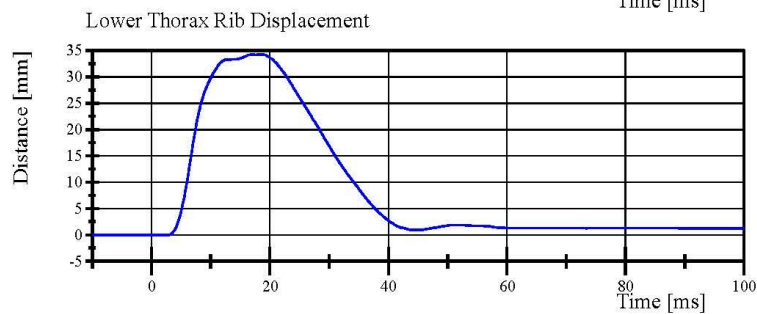
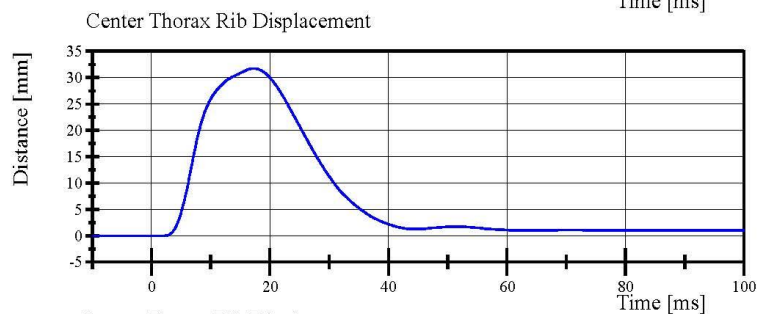
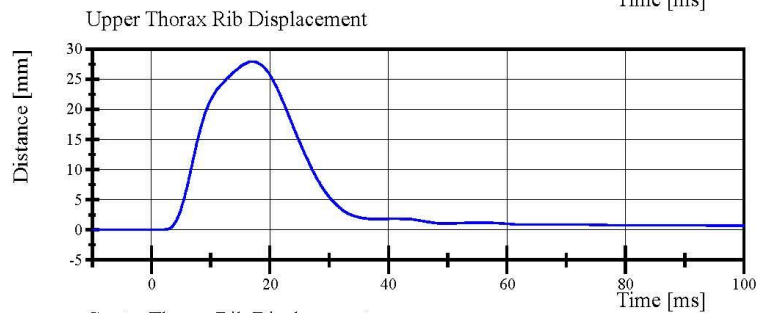
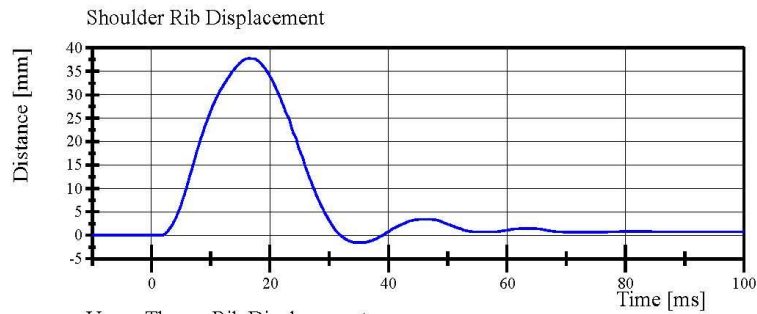
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.09.2024 15:29:46 612



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 297 Certification No. 67-1
Test Date: 5/9/2024



Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.09.2024 15:29:46 612



Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. 297 Certification No. 67-1
Test Date: 5/9/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	59 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.357 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-15.5 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	36.3 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	42.4 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	40.4 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	13.8 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	9.2 g	Yes

Test meets specifications.

Condition: Used

Comments:

Upper Thorax Rib S/N: 180-3362 DP6492

Middle Thorax Rib S/N: 180-3362 DP6493

Lower Thorax Rib S/N: 180-3362 DP7664

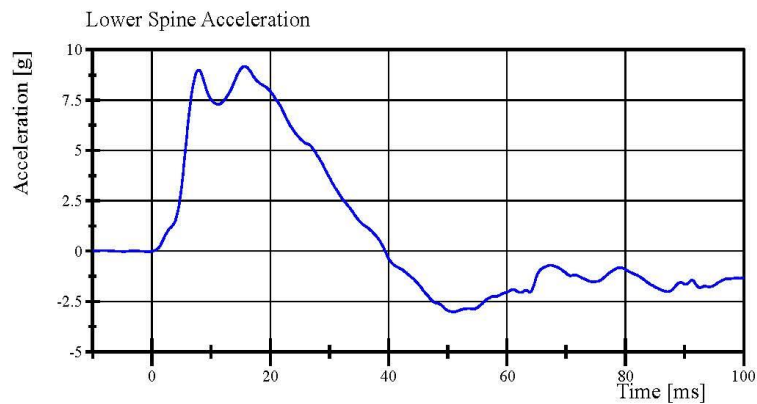
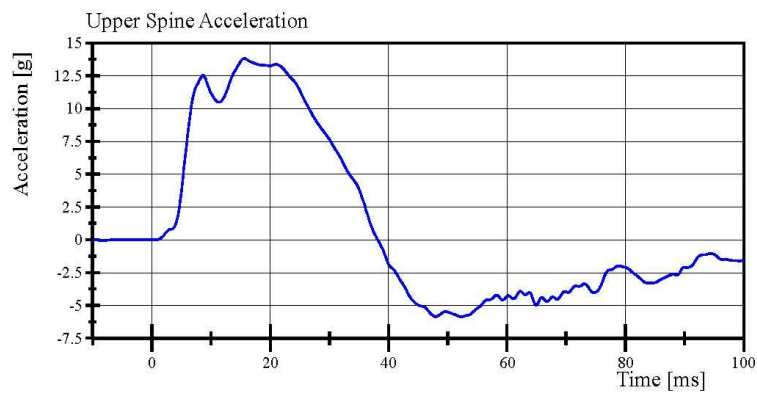
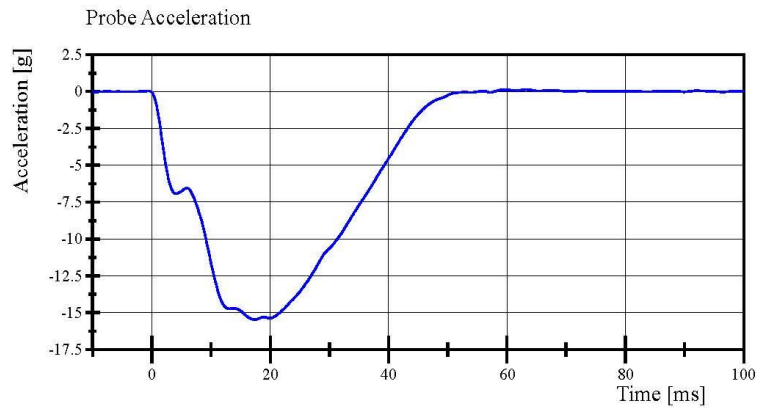
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.09.2024 14:58:48 801



Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. 297 Certification No. 67-1
Test Date: 5/9/2024



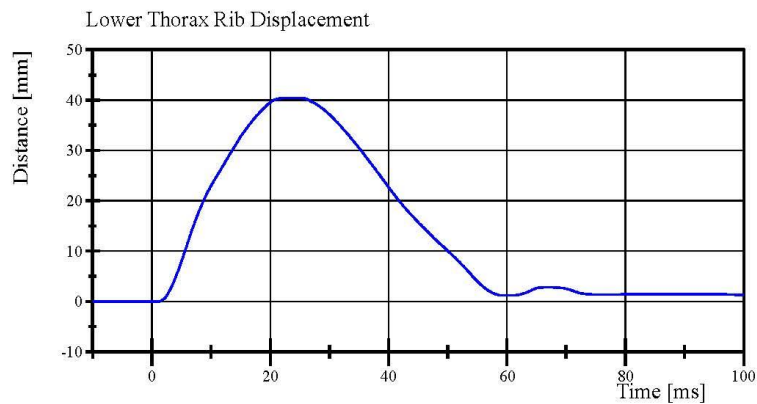
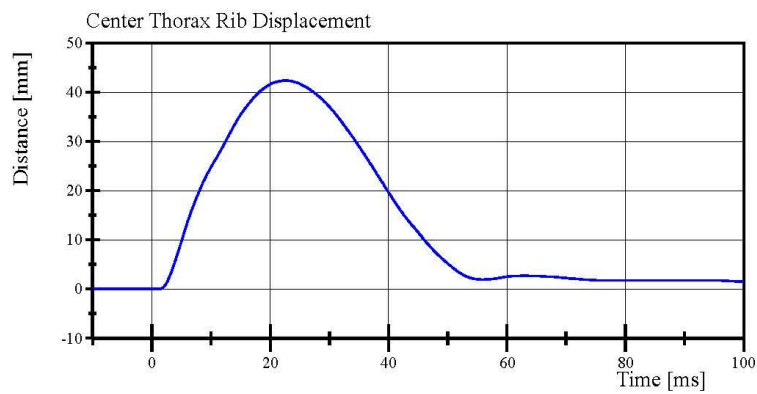
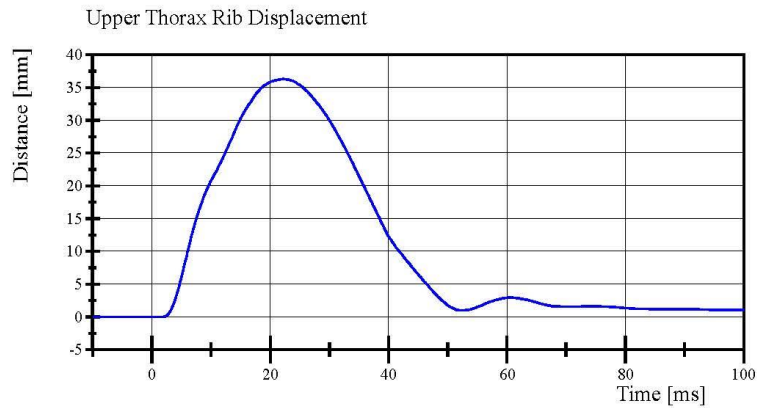
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.09.2024 14:59:23 801



Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. 297 Certification No. 67-1
Test Date: 5/9/2024



Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.09.2024 14:59:23 801



Transportation Research Center Inc.

Left Lateral Abdomen

SID IIs Serial No. 297 Certification No. 67-2

Test Date: 5/10/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	47 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.27 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-13.8 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	41.6 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	37.8 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	11.01 g	Yes

Test meets specifications.

Condition: Used

Comments:

Upper Abdominal Rib S/N: DM7281

Lower Abdominal Rib S/N: DM7275

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.10.2024 07:38:47 667

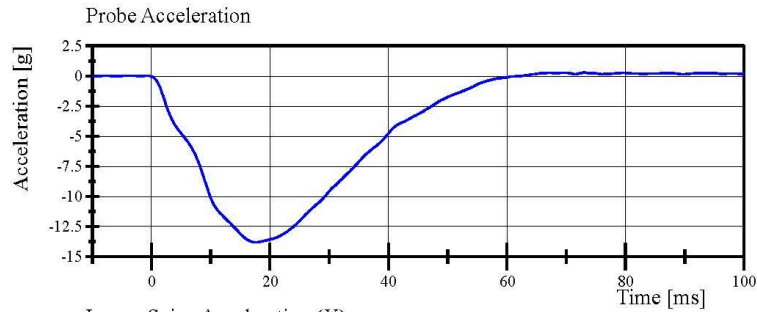


Transportation Research Center Inc.

Left Lateral Abdomen

SID IIS Serial No. 297 Certification No. 67-2

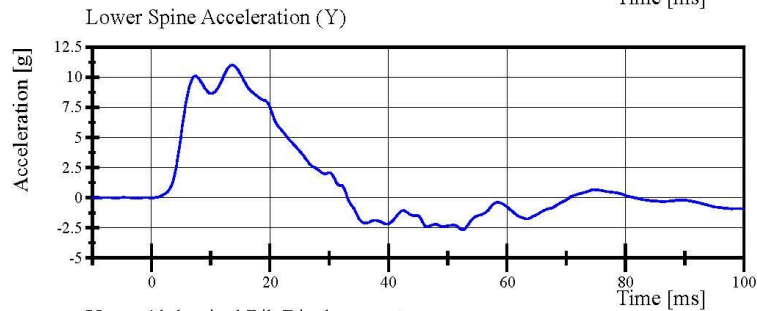
Test Date: 5/10/2024



Filter Class: CFC_180

Max: 0.3 g at 73.0 ms

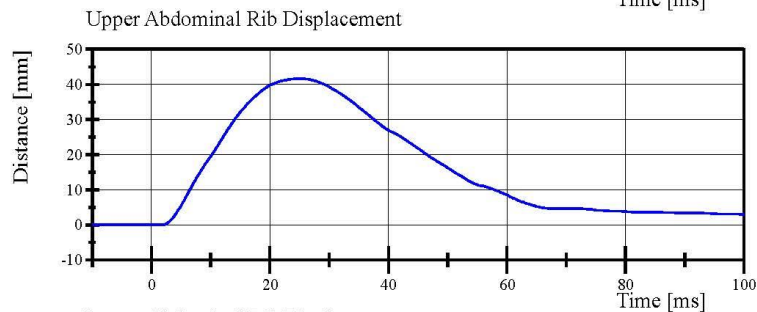
Min: -13.8 g at 17.6 ms



Filter Class: CFC_180

Max: 11.0 g at 13.7 ms

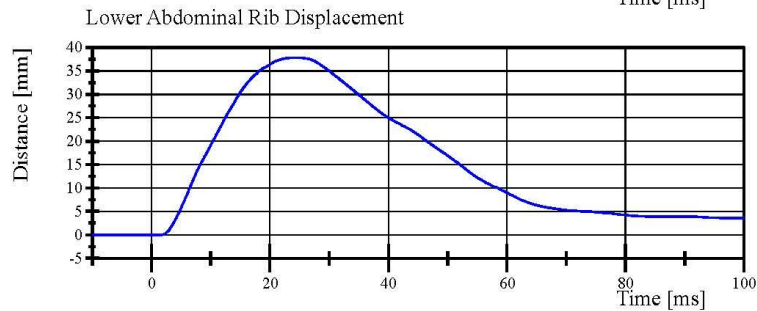
Min: -2.7 g at 52.6 ms



Filter Class: CFC_600

Max: 41.6 mm at 25.1 ms

Min: -0.0 mm at 1.8 ms



Filter Class: CFC_600

Max: 37.8 mm at 24.8 ms

Min: -0.0 mm at 1.6 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.10.2024 07:39:15 667



Transportation Research Center Inc.

Left Lateral Pelvis
SID IIs Serial No. 297 Certification No. 67-1
Test Date: 5/9/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	62 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.62 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-42.63 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	37.0 g	Yes
Acetabulum Force	3,600 - 4,300 N	3,698.3 N	Yes

Test meets specifications.

Condition: Used

Comments:

Pelvis Skin S/N: 1171

Pelvis Plug Info:

Manufacturer: Saco

S/N: 14623

Cal Date: 20201221

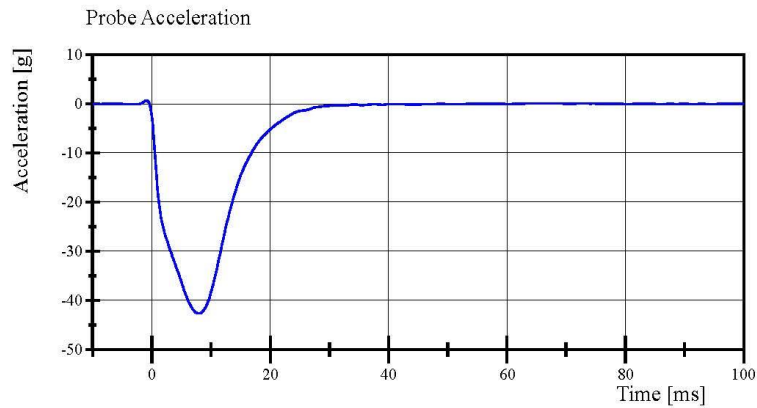
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.09.2024 14:31:23 450

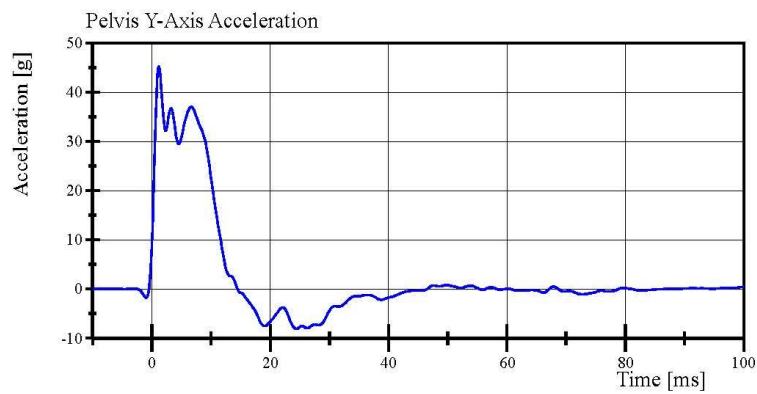


Transportation Research Center Inc.

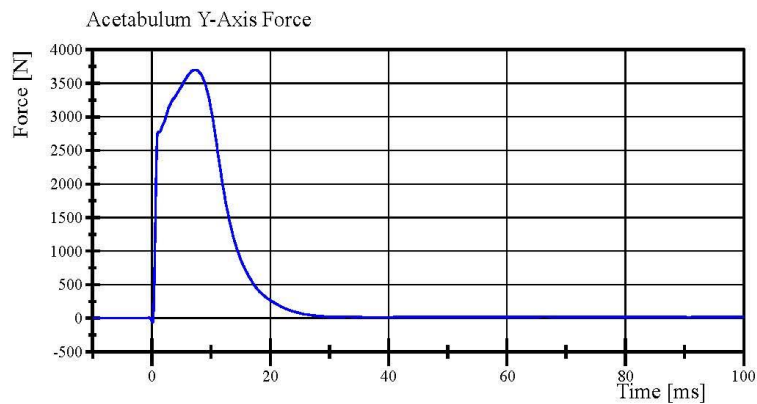
Left Lateral Pelvis
SID IIs Serial No. 297 Certification No. 67-1
Test Date: 5/9/2024



Filter Class: CFC_180
Max: 0.7 g at -0.9 ms
Min: -42.6 g at 7.9 ms



Filter Class: CFC_180
Max: 45.2 g at 1.2 ms
Min: -8.1 g at 24.4 ms



Filter Class: CFC_600
Max: 3,698.3 N at 7.3 ms
Min: -64.8 N at 0.1 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.09.2024 14:32:32 450



Transportation Research Center Inc.

Left Lateral Iliac

SID IIs Serial No. 297 Certification No. 67-1

Test Date: 5/10/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	47 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.28 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-42.3 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	34.2 g	Yes
Iliac Force	4,100 - 5,100 N	4,962.4 N	Yes

Test meets specifications.

Condition: Used

Comments:

Pelvis Skin S/N: 1171

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.10.2024 07:48:52 656

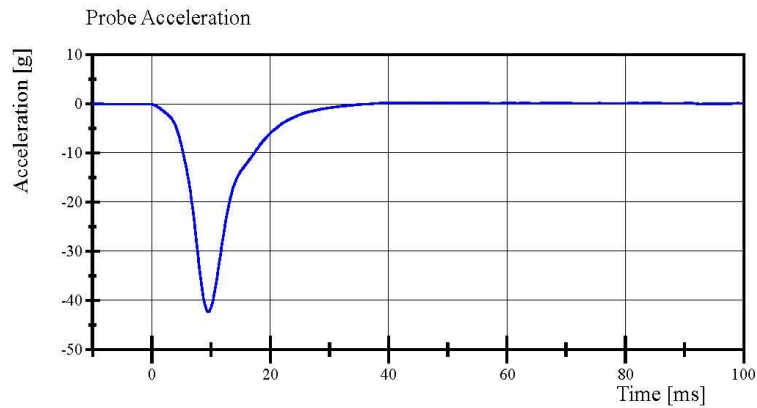


Transportation Research Center Inc.

Left Lateral Iliac

SID IIs Serial No. 297 Certification No. 67-1

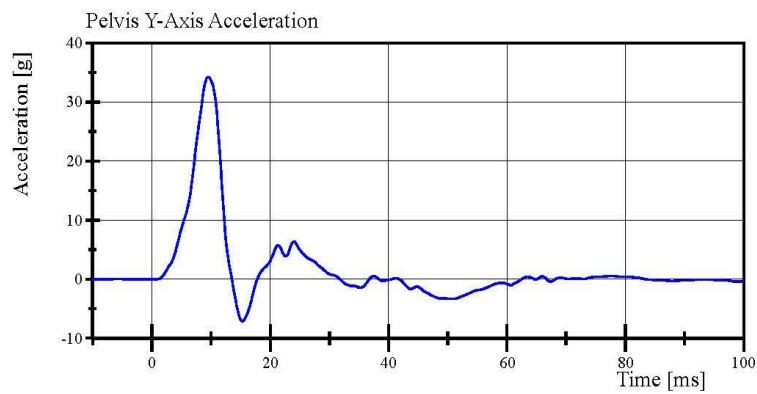
Test Date: 5/10/2024



Filter Class: CFC_180

Max: 0.3 g at 40.7 ms

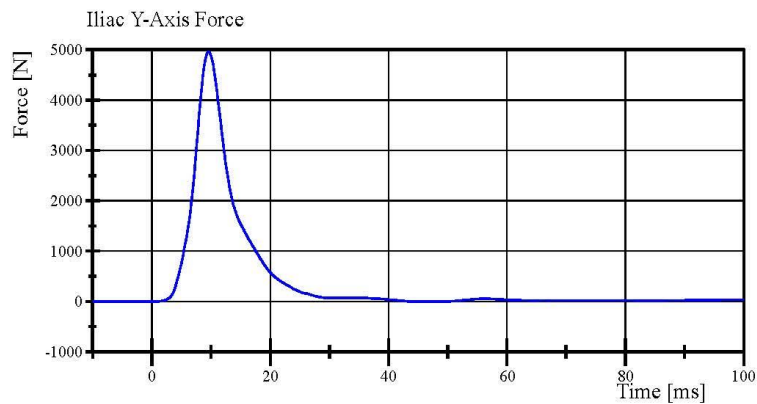
Min: -42.3 g at 9.5 ms



Filter Class: CFC_180

Max: 34.2 g at 9.5 ms

Min: -7.1 g at 15.3 ms



Filter Class: CFC_600

Max: 4,962.4 N at 9.6 ms

Min: -6.9 N at 47.5 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.10.2024 07:49:17 656



Post-Test Calibration Sheets
Driver S/N 297

Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. 297 Calibration No. 68

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	780	Yes
B	Shoulder Pivot Height	437.0 - 453.0	450	Yes
C	H-Point Height	79.0 - 89.0	85	Yes
D	H-Point from Seat Back	141.0 - 151.0	147	Yes
E	Shoulder Pivot from Backline	97.0 - 107.0	102	Yes
F	Thigh Clearance	119.0 - 135.0	130	Yes
G	Head Breadth	140.0 - 148.0	147	Yes
H	Head Back from Backline	40.0 - 46.0	45	Yes
I	Head Depth	178.0 - 188.0	183	Yes
J	Head Circumference	541.0 - 551.0	544	Yes
K	Buttock to Knee Length	514.0 - 540.0	528	Yes
L	Popliteal Height	343.0 - 369.0	353	Yes
M	Knee Pivot to Floor Height	393.0 - 409.0	400	Yes
N	Buttock Popliteal Length	416.0 - 442.0	430	Yes
O	Chest Depth without Jacket	195.0 - 211.0	200	Yes
P	Foot Length (right)	216.0 - 232.0	223	Yes
P	Foot Length (left)	216.0 - 232.0	223	Yes
Q	Hip Breadth	313.0 - 323.0	319	Yes
R	Arm Length	249.0 - 259.0	254	Yes
S	Knee Joint to seat Back	478.0 - 493.0	485	Yes
V	Shoulder Width (only one arm installed)	341.0 - 357.0	347	Yes
W	Foot Width (right)	78.0 - 94.0	85	Yes
W	Foot Width (left)	78.0 - 94.0	85	Yes
Y	Chest Circumference with Jacket	851.0 - 881.0	877	Yes
Z	Waist Circumference	761.0 - 791.0	781	Yes

Revised 9/29/2005

Report Number: 297_S2F68

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Transportation Research Center Inc.

Left Lateral Head Drop

SID IIs Serial No. 297 Certification No. 68-1

Test Date: 6/13/2024

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	54 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	119.4 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	1.7 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	< 15 %	1.12 %	Yes

Test meets specifications.

Condition: Used

Comments:

Head Skin S/N: 1330

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

06.13.2024 09:04:36 233

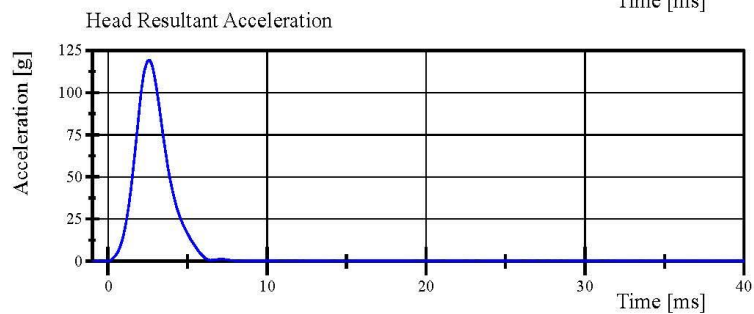
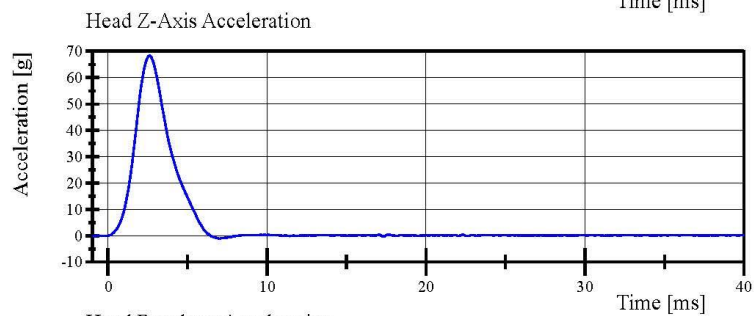
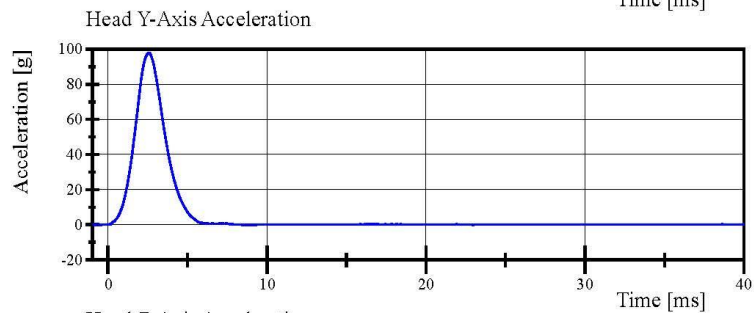
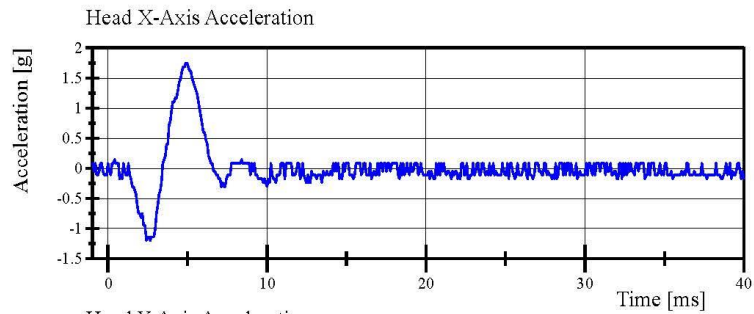


Transportation Research Center Inc.

Left Lateral Head Drop

SID IIs Serial No. 297 Certification No. 68-1

Test Date: 6/13/2024



Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

06.13.2024 09:05:00 233



Transportation Research Center Inc.

Left Lateral Neck

SID IIS Serial No. 297 Certification No. 68-2

Test Date: 6/13/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	52 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.629 m/s	Yes
Pendulum Integrated Velocity			
Change at 10 ms	2.20 - 2.80 m/s	2.311 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.391 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	4.622 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.592 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.817 m/s	Yes
Maximum Headform Flexion			
Peak	(-71) - (-81) deg	-73.8 deg	Yes
Time of Peak	50 - 70 ms	64.1 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	39.5 N·m	Yes
Decay to 0 N·m	102 - 126 ms	116.2 ms	Yes

Test meets specifications.

Condition: Used

Comments:

Neck S/N: 779

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

06.13.2024 10:25:34 750

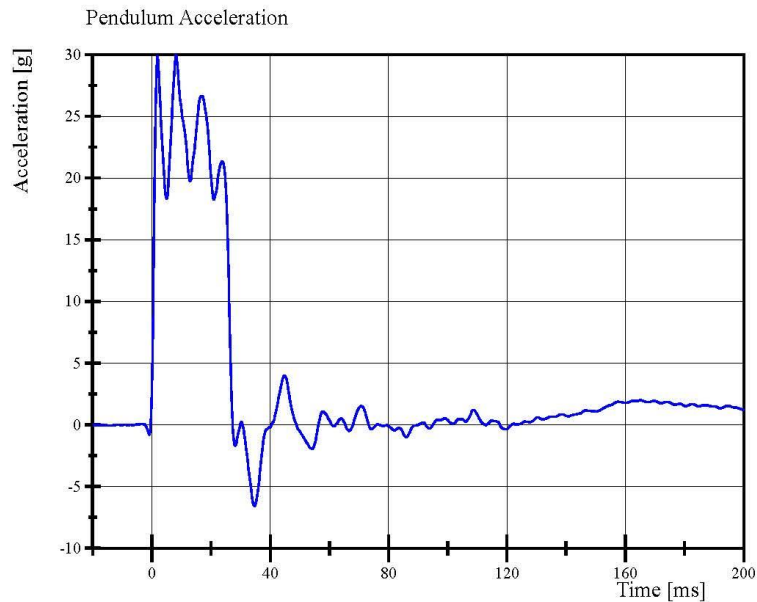


Transportation Research Center Inc.

Left Lateral Neck

SID IIS Serial No. 297 Certification No. 68-2

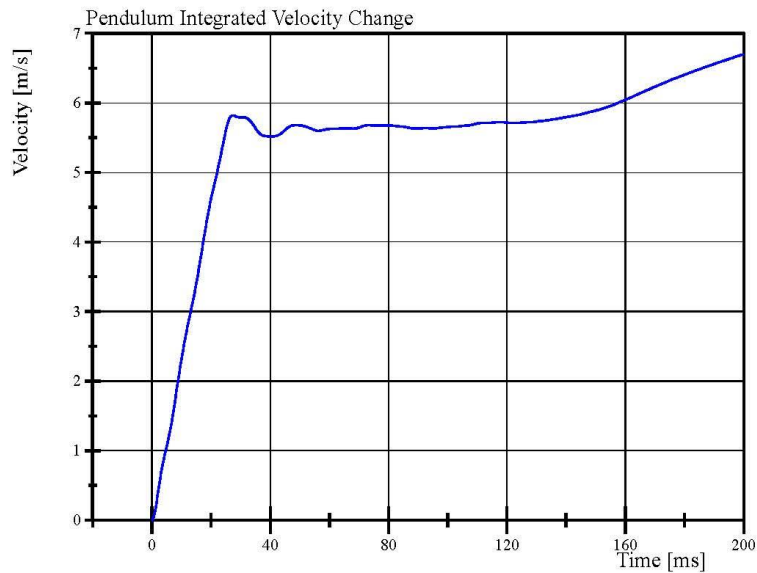
Test Date: 6/13/2024



Filter Class: CFC_180

Max: 30.0 g at 8.2 ms

Min: -6.6 g at 34.7 ms



Filter Class: CFC_180

Max: 6.7 m/s at 200.0 ms

Min: 0.0 m/s at 0.0 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

06.13.2024 10:26:21 750

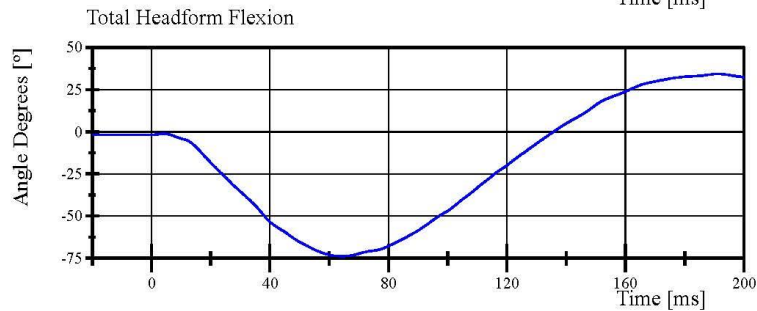
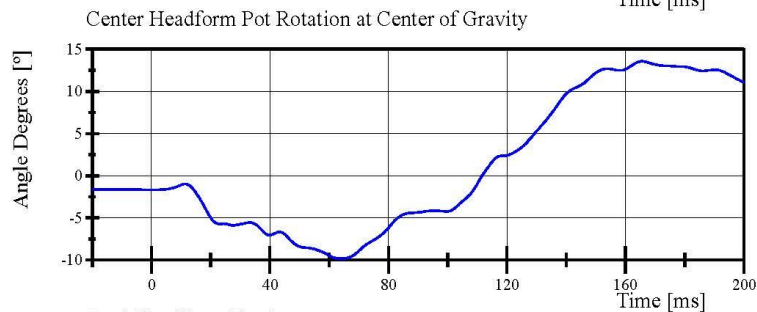
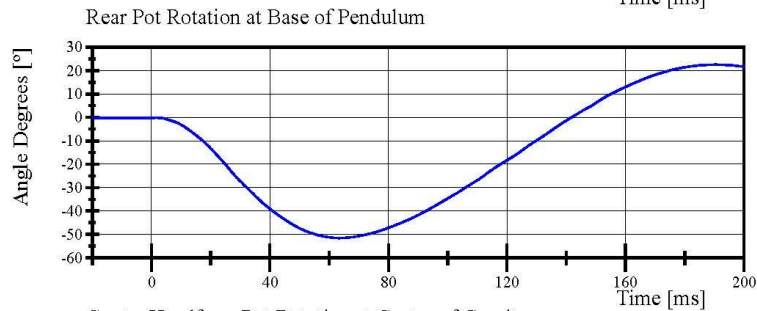
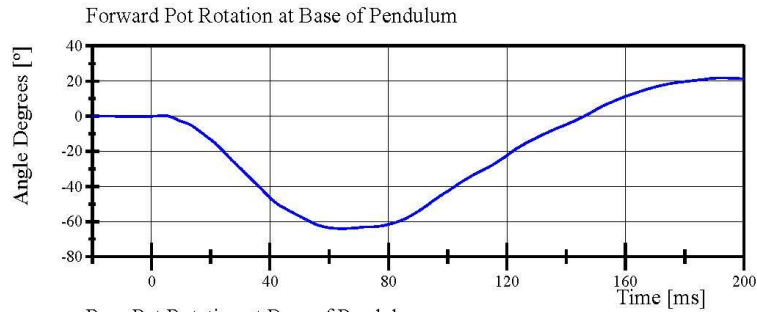


Transportation Research Center Inc.

Left Lateral Neck

SID IIS Serial No. 297 Certification No. 68-2

Test Date: 6/13/2024



Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

06.13.2024 10:26:21 750

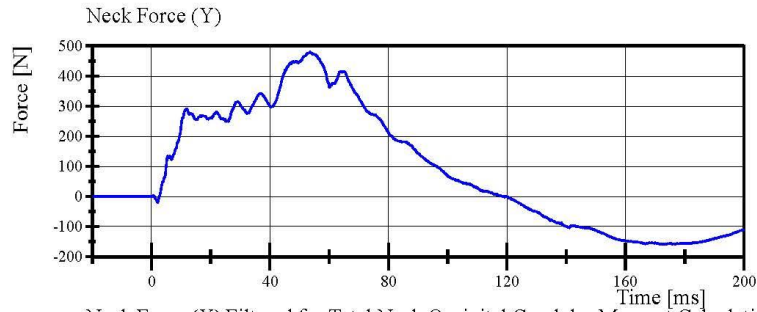


Transportation Research Center Inc.

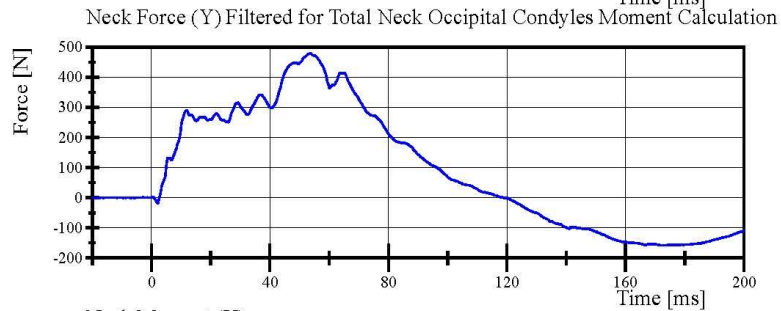
Left Lateral Neck

SID IIs Serial No. 297 Certification No. 68-2

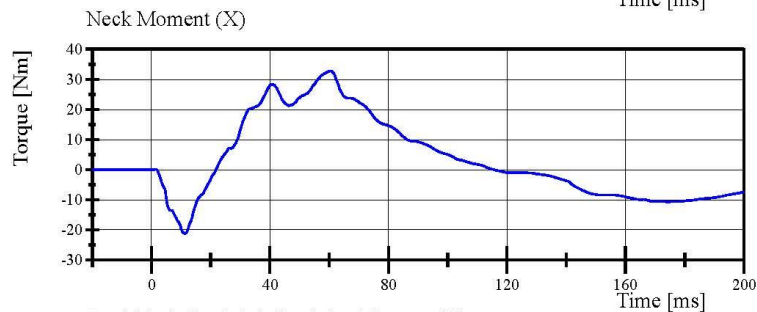
Test Date: 6/13/2024



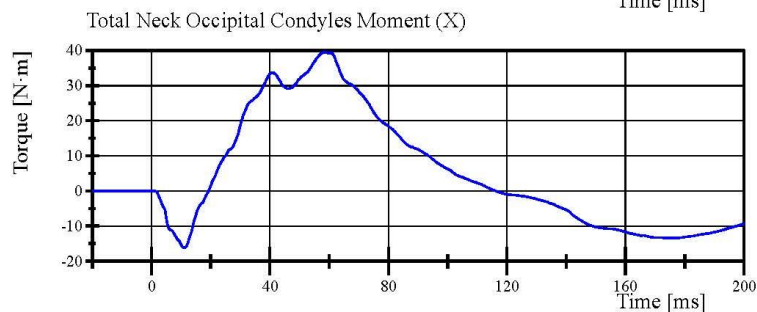
Filter Class: CFC_1000
Max: 480.1 N at 53.5 ms
Min: -158.4 N at 172.2 ms



Filter Class: CFC_600
Max: 479.0 N at 53.6 ms
Min: -158.2 N at 172.2 ms



Filter Class: CFC_600
Max: 32.9 Nm at 60.3 ms
Min: -21.2 Nm at 11.3 ms



Filter Class: Without_(Constar
Max: 39.5 N·m at 58.6 ms
Min: -16.2 N·m at 11.1 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

06.13.2024 10:26:22 750



Transportation Research Center Inc.

Left Lateral Shoulder
SID IIs Serial No. 297 Certification No. 68-1
Test Date: 6/13/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	55 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.27 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-15.1 g	Yes
Shoulder Displacement	28 - 37 mm	25.6 mm	No
Upper Spine Lateral Acceleration	17 - 22 g	19.5 g	Yes

Test does not meet specifications.

Condition: Used

Comments:

Arm S/N: 940L

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

06.13.2024 12:18:49 879

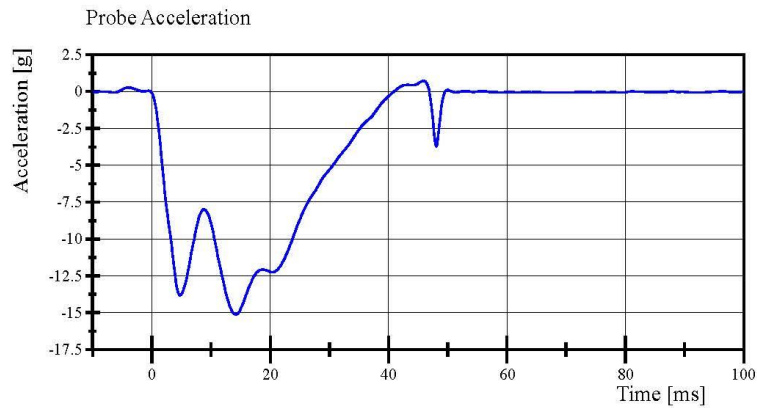


Transportation Research Center Inc.

Left Lateral Shoulder

SID IIs Serial No. 297 Certification No. 68-1

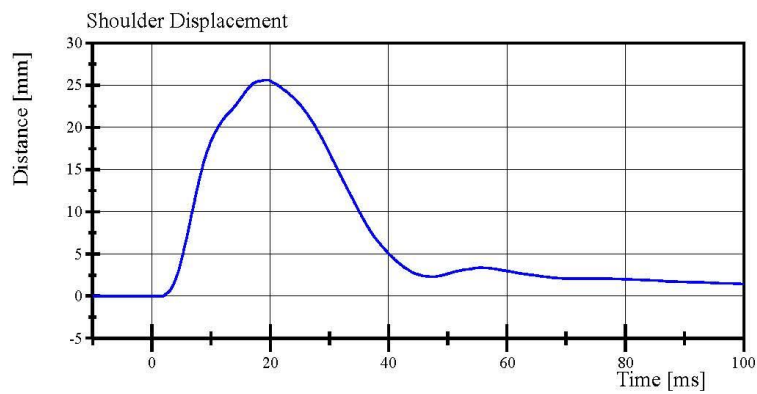
Test Date: 6/13/2024



Filter Class: CFC_180

Max: 0.7 g at 45.9 ms

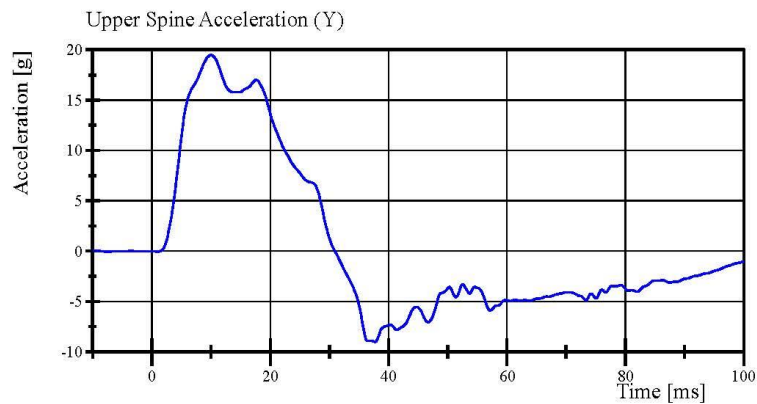
Min: -15.1 g at 14.2 ms



Filter Class: CFC_600

Max: 25.6 mm at 19.5 ms

Min: -0.0 mm at 1.7 ms



Filter Class: CFC_180

Max: 19.5 g at 10.0 ms

Min: -9.0 g at 37.7 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

06.13.2024 12:19:37 879



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIS Serial No. 297 Certification No. 68-1
Test Date: 6/13/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	58 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.725 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-34.6 g	Yes
Shoulder Displacement	31 - 40 mm	29.9 mm	No
Upper Thorax Rib Displacement	25 - 32 mm	27.5 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	31.8 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	34.8 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	39.1 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	34.6 g	Yes

Test does not meet specifications.

Condition: Used

Comments:

Left Arm S/N: 940L

Shoulder Rib S/N: 180-3355 259

Upper Thorax Rib S/N: DM5020

Middle Thorax Rib S/N: DM5021

Lower Thorax Rib S/N: DM5022

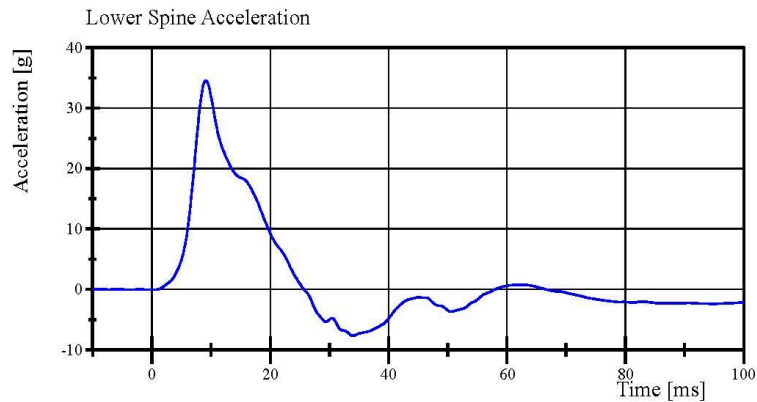
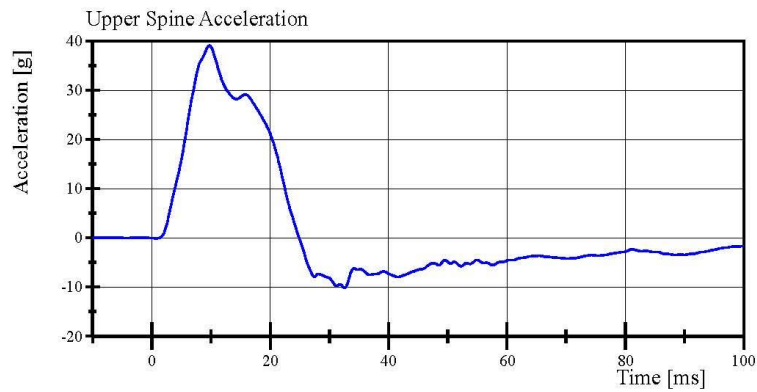
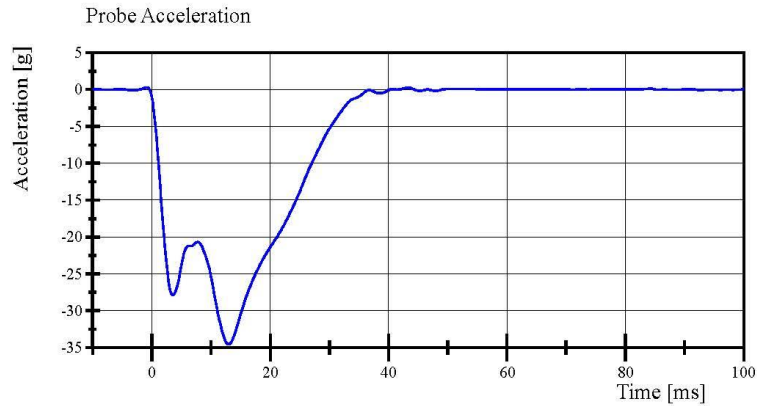
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

06.13.2024 13:16:52 610



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 297 Certification No. 68-1
Test Date: 6/13/2024



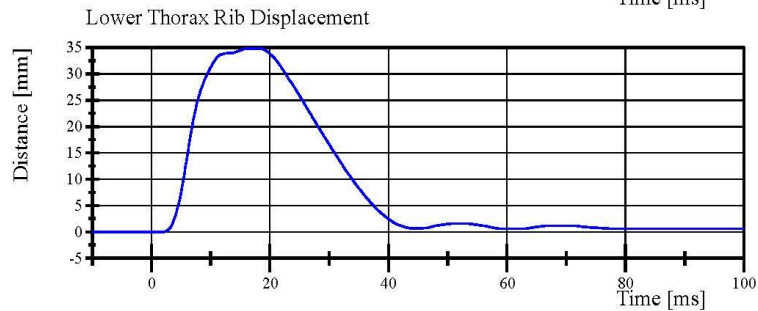
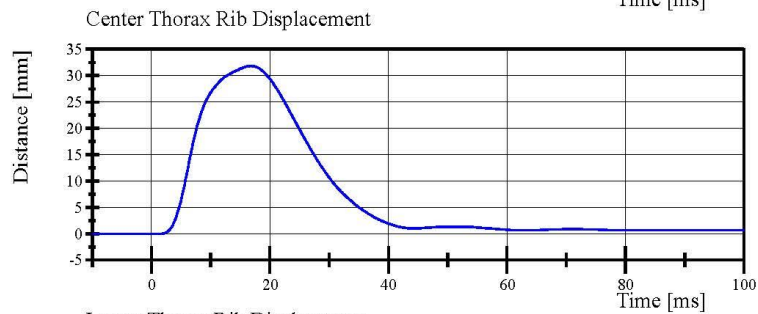
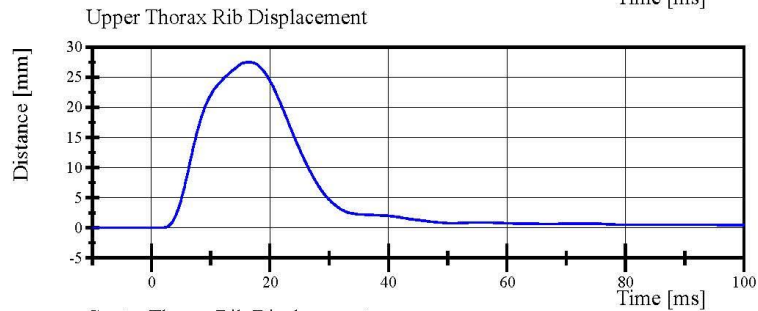
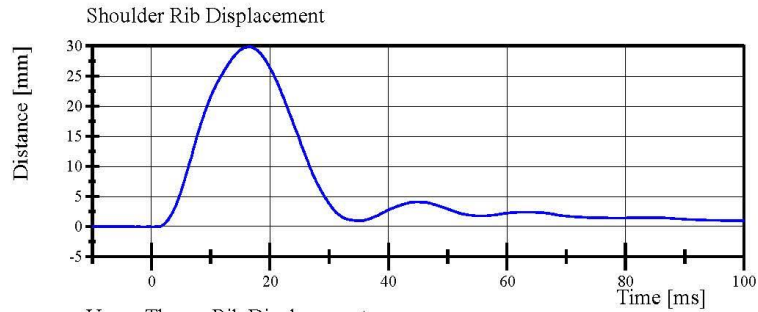
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

06.13.2024 13:18:55 610



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 297 Certification No. 68-1
Test Date: 6/13/2024



Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

06.13.2024 13:18:55 610



Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIS Serial No. 297 Certification No. 68-1
Test Date: 6/13/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	55 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.356 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-15.4 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	39.0 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	42.5 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	38.5 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	14.1 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	9.4 g	Yes

Test meets specifications.

Condition: Used

Comments:

Upper Thorax Rib S/N: 180-3362 DP6492

Middle Thorax Rib S/N: 180-3362 DP6493

Lower Thorax Rib S/N: 180-3362 DP7664

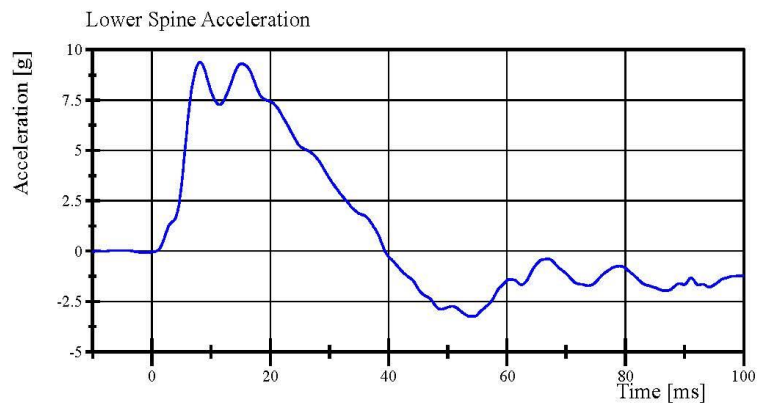
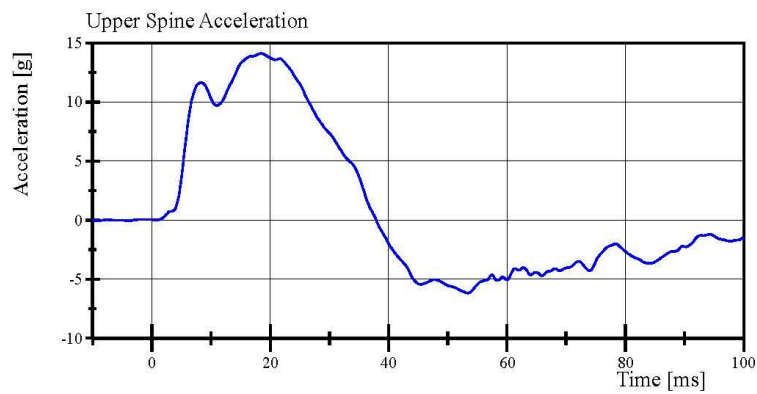
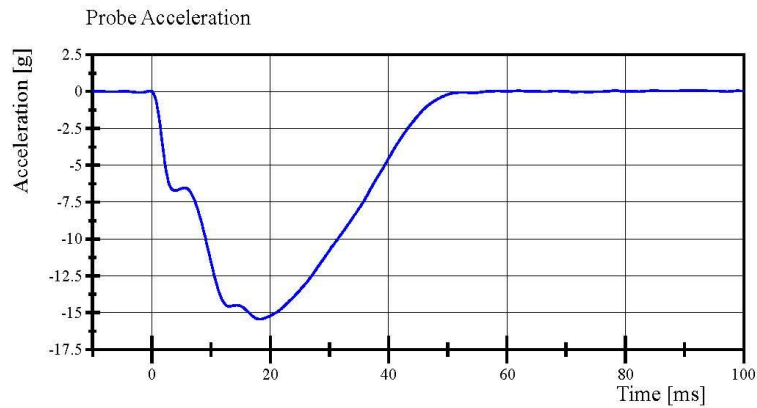
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

06.13.2024 12:45:34 824



Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. 297 Certification No. 68-1
Test Date: 6/13/2024



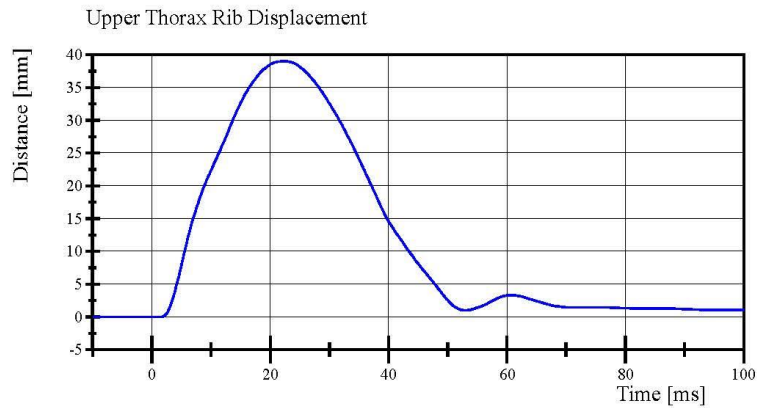
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

06.13.2024 12:46:05 824

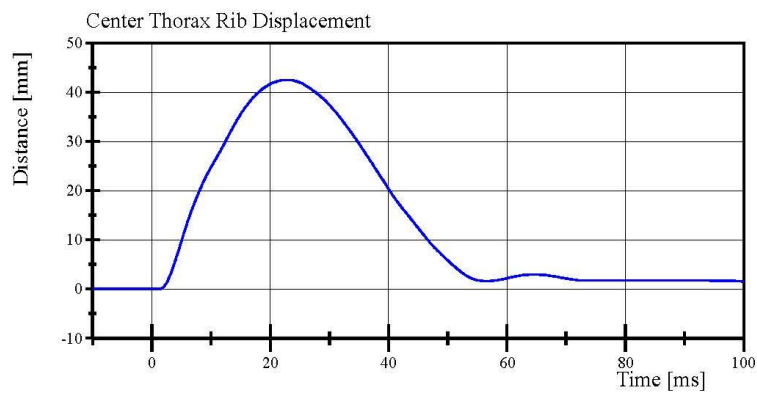


Transportation Research Center Inc.

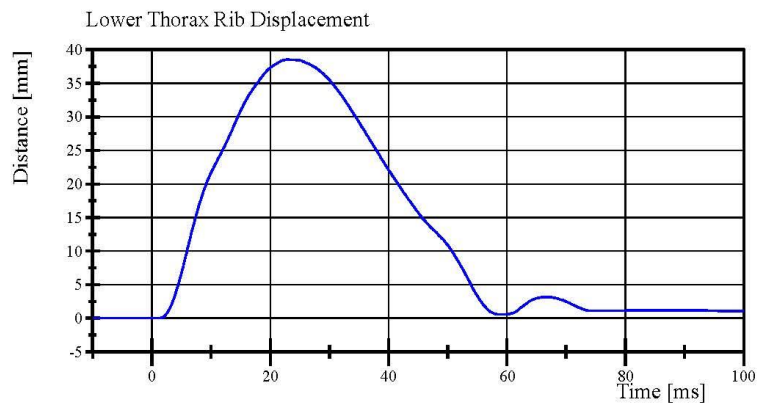
Left Lateral Thorax without Arm
SID IIs Serial No. 297 Certification No. 68-1
Test Date: 6/13/2024



Filter Class: CFC_600
Max: 39.0 mm at 22.3 ms
Min: -0.0 mm at -4.6 ms



Filter Class: CFC_600
Max: 42.5 mm at 23.0 ms
Min: -0.0 mm at -4.2 ms



Filter Class: CFC_600
Max: 38.5 mm at 23.0 ms
Min: -0.0 mm at -3.2 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

06.13.2024 12:46:06 824



Transportation Research Center Inc.

Left Lateral Abdomen

SID IIS Serial No. 297 Certification No. 68-1

Test Date: 6/13/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	58 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.27 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-14.4 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	34.7 mm	No
Lower Abdominal Rib Displacement	33 - 44 mm	39.0 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	11.14 g	Yes

Test does not meet specifications.

Condition: Used

Comments:

Upper Abdominal Rib S/N: DM7281

Lower Abdominal Rib S/N: DM7275

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

06.13.2024 12:31:48 699

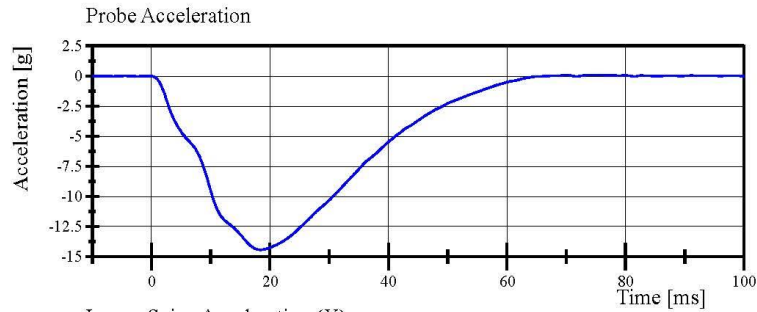


Transportation Research Center Inc.

Left Lateral Abdomen

SID IIs Serial No. 297 Certification No. 68-1

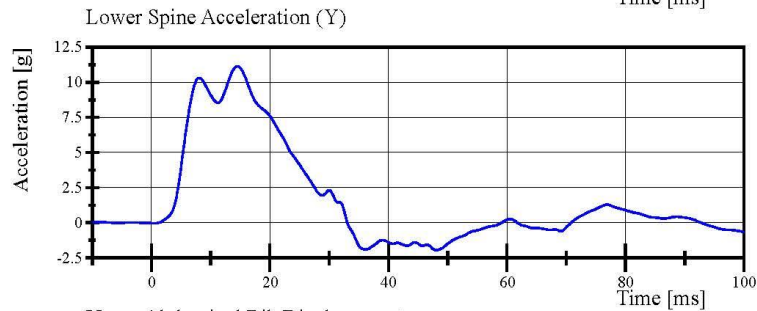
Test Date: 6/13/2024



Filter Class: CFC_180

Max: 0.1 g at 75.0 ms

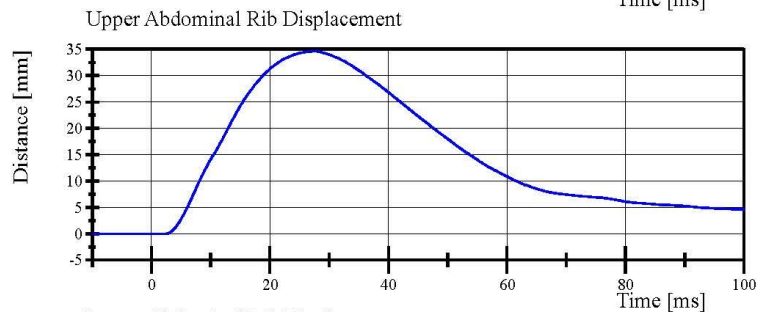
Min: -14.4 g at 18.5 ms



Filter Class: CFC_180

Max: 11.1 g at 14.5 ms

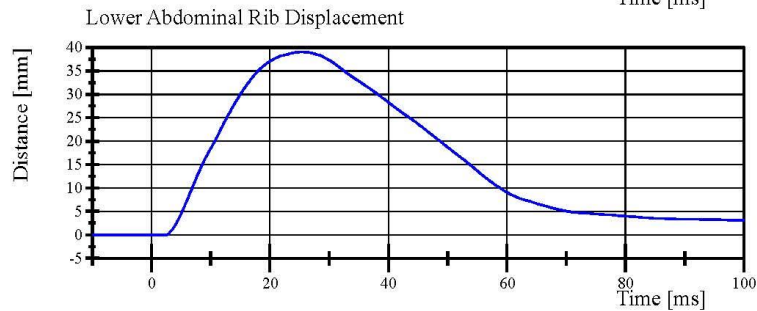
Min: -1.9 g at 48.0 ms



Filter Class: CFC_600

Max: 34.7 mm at 27.5 ms

Min: -0.0 mm at 0.4 ms



Filter Class: CFC_600

Max: 39.0 mm at 25.1 ms

Min: -0.0 mm at 2.5 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

06.13.2024 12:32:58 699



Transportation Research Center Inc.

Left Lateral Pelvis

SID IIS Serial No. 297 Certification No. 68-1

Test Date: 6/13/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	55 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.62 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-42.32 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	35.0 g	Yes
Acetabulum Force	3,600 - 4,300 N	3,509.7 N	No

Test does not meet specifications.

Condition: Used

Comments:

Pelvis Skin S/N: 1171

Pelvis Plug Info:

Manufacturer: Saco

S/N: 14624

Cal Date: 20201221

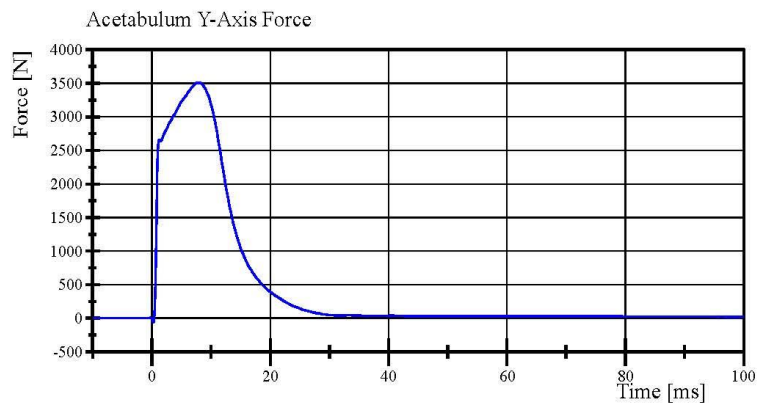
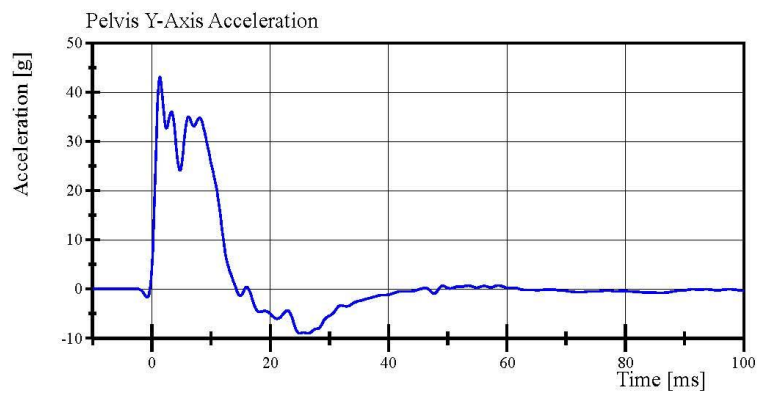
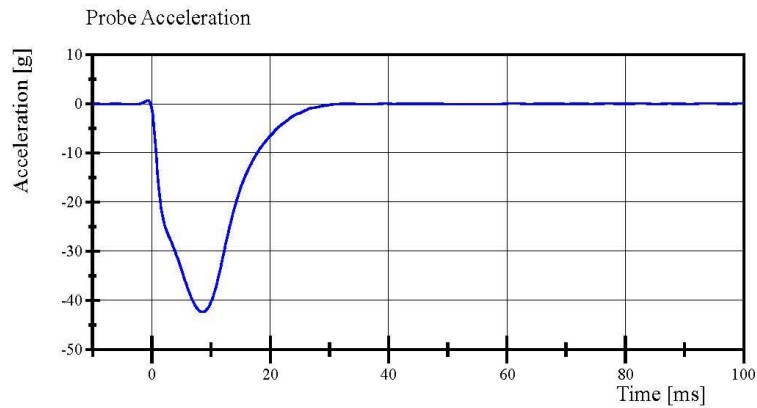
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

06.13.2024 11:31:00 455



Transportation Research Center Inc.

Left Lateral Pelvis
SID IIs Serial No. 297 Certification No. 68-1
Test Date: 6/13/2024



Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

06.13.2024 11:32:57 455



Transportation Research Center Inc.

Left Lateral Iliac

SID IIs Serial No. 297 Certification No. 68-1

Test Date: 6/13/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	55 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.25 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-41.8 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	36.3 g	Yes
Iliac Force	4,100 - 5,100 N	4,902.4 N	Yes

Test meets specifications.

Condition: Used

Comments:

Pelvis Skin S/N: 1171

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

06.13.2024 13:28:22 650

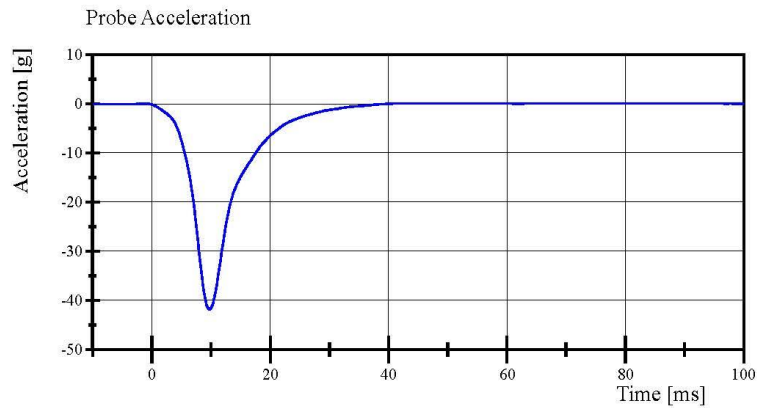


Transportation Research Center Inc.

Left Lateral Iliac

SID IIs Serial No. 297 Certification No. 68-1

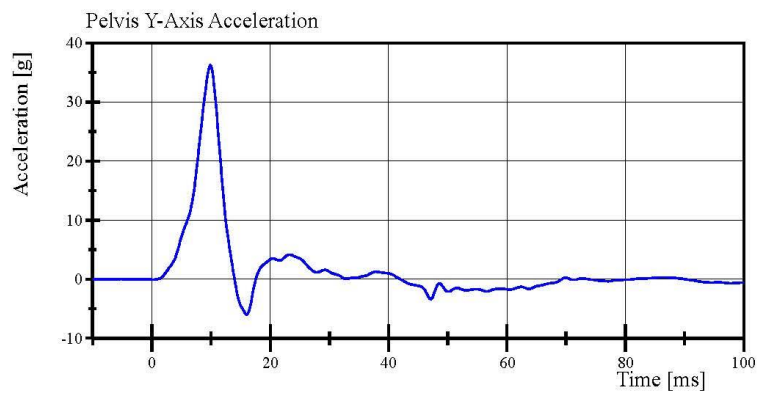
Test Date: 6/13/2024



Filter Class: CFC_180

Max: 0.1 g at 44.9 ms

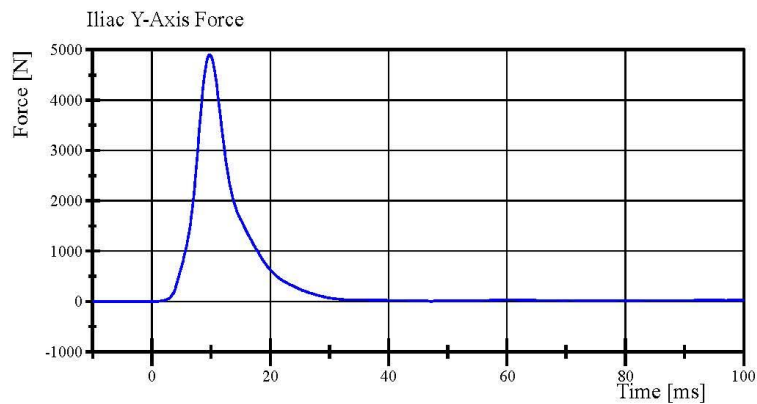
Min: -41.8 g at 9.8 ms



Filter Class: CFC_180

Max: 36.3 g at 9.8 ms

Min: -6.0 g at 16.0 ms



Filter Class: CFC_600

Max: 4,902.4 N at 9.8 ms

Min: -0.7 N at -8.3 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

06.13.2024 13:29:29 650



APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

TABLE 1 – Dummy Instrumentation (SID-IIs)

				SID-IIs S/N 297			
				Serial Number	Manufacturer	Calibration Date	
Head Accelerometers				X	T17622	Endevco	24-May-2024
				Y	T24507	Endevco	24-May-2024
				Z	T17636	Endevco	24-May-2024
Displacement Potentiometers	Shoulder			Y	N/A	N/A	N/A
	Thoracic Rib	Upper	Y	023	Servo	26-Apr-2024	
		Middle	Y	063	Servo	26-Apr-2024	
		Lower	Y	043	Servo	26-Apr-2024	
	Abdominal Rib	Upper	Y	1152	Servo	26-Apr-2024	
		Lower	Y	051	Servo	26-Apr-2024	
Lower Spine Accelerometers (T12)				X	T20232	Endevco	24-May-2024
				Y	T21084	Endevco	24-May-2024
				Z	T17633	Endevco	24-May-2024
Acetabulum Load Cell				Y	235-FY	FTSS	26-Apr-2024
Iliac Wing Load Cell				Y	320-FY	Denton	26-Apr-2024
Pelvis Plug (struck side)					14622	Saco	21-Dec-2020
Pelvis Plug (non-struck side)					14625	Saco	21-Dec-2020

TABLE 2 – Vehicle Instrumentation

Vehicle Instrumentation		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	A400097	Measurement Specialties	22-Mar-2024
Vehicle Center of Gravity	Y	A377510	Measurement Specialties	25-Mar-2024
Vehicle Center of Gravity	Z	A400091	Measurement Specialties	23-May-2024
Left Floor Sill	Y	A297050	Measurement Specialties	22-Mar-2024
A-Pillar Sill	Y	A386337	Measurement Specialties	23-May-2024
A-Pillar Low	Y	A349795	Measurement Specialties	25-Mar-2024
A-Pillar Mid	Y	A386358	Measurement Specialties	25-Mar-2024
B-Pillar Sill	Y	A378304	Measurement Specialties	23-May-2024
B-Pillar Low	Y	A349877	Measurement Specialties	21-Mar-2024
B-Pillar Mid	Y	A349806	Measurement Specialties	22-Mar-2024
Driver Seat	Y	A385702	Measurement Specialties	5-Jun-2024
Engine Top	X	A254929	Measurement Specialties	25-Mar-2024
Engine Top	Y	A377501	Measurement Specialties	21-Mar-2024
Firewall	Y	A385749	Measurement Specialties	23-May-2024
Right Roof	Y	A386339	Measurement Specialties	23-May-2024
Right Floor Sill	Y	A349892	Measurement Specialties	10-Jun-2024
Rear Floor Pan	X	A381839	Measurement Specialties	21-Mar-2024
Rear Floor Pan	Y	A378291	Measurement Specialties	23-May-2024

TABLE 3 – Pole Instrumentation

Pole Instrumentation	Serial Number	Manufacturer	Calibration Date
Load Cell 1	DK7091S	Humanetics	4-Jan-2024
Load Cell 2	DK7120S	Humanetics	4-Jan-2024
Load Cell 3	DK7118S	Humanetics	4-Jan-2024
Load Cell 4	DK7124S	Humanetics	4-Jan-2024
Load Cell 5	DK7111S	Humanetics	4-Jan-2024
Load Cell 6	DK7126S	Humanetics	4-Jan-2024
Load Cell 7	DK7112S	Humanetics	4-Jan-2024
Load Cell 8	DK7074S	Humanetics	4-Jan-2024