

REPORT NUMBER: 214D-MGA-2002-001

**SAFETY COMPLIANCE TESTING FOR FMVSS 214
SIDE IMPACT PROTECTION
INDICANT**

**Honda of Canada Mfg.
2002 Honda Odyssey
NHTSA NUMBER: C25304**

**PREPARED BY:
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January 9, 2002

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF VEHICLE SAFETY COMPLIANCE
400 SEVENTH STREET, SW, ROOM 6111 (NSA-30)
WASHINGTON, D.C. 20590**

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16. Abstract A 55/28 km/h 90° Moving Deformable Barrier INDICANT Compliance Test was conducted on the 2002 Honda Odyssey in accordance with the specifications of the Office of Vehicle Safety Compliance Laboratory Test Procedure No. TP-214D-06 Side Impact Protection (except the test was conducted 8 km/h (5 mph) faster than the standard specifies) for determination of FMVSS No. 214 Side Impact Protection. The test was conducted at MGA Research Corporation in Burlington, Wisconsin on January 9, 2002. The impact velocity of the Moving Deformable Barrier (MDB) was 62.1 km/h and the ambient temperature at the struck side (driver's) of the vehicle was 21 °C. The target vehicle's maximum post test static crush was 332 mm at level 3. The test vehicle's occupant performance is as follows: <table style="margin-left: auto; margin-right: auto; border: none;"> <thead> <tr> <th></th> <th style="text-align: center;"><u>DRIVER</u></th> <th style="text-align: center;"><u>PASS.</u></th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib (LUR) Accel., g</td> <td style="text-align: center;">34</td> <td style="text-align: center;">27</td> </tr> <tr> <td>Left Lower Rib (LLR) Accel., g</td> <td style="text-align: center;">32</td> <td style="text-align: center;">38</td> </tr> <tr> <td>Lower Spine (T₁₂) Accel., g</td> <td style="text-align: center;">31</td> <td style="text-align: center;">34</td> </tr> <tr> <td>Thoracic Trauma Index (TTI)</td> <td style="text-align: center;">32</td> <td style="text-align: center;">36</td> </tr> <tr> <td>Pelvis (PEV) Accel., g</td> <td style="text-align: center;">61</td> <td style="text-align: center;">56</td> </tr> <tr> <td>HIC</td> <td style="text-align: center;">51</td> <td style="text-align: center;">221</td> </tr> </tbody> </table> The 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.					<u>DRIVER</u>	<u>PASS.</u>	Left Upper Rib (LUR) Accel., g	34	27	Left Lower Rib (LLR) Accel., g	32	38	Lower Spine (T ₁₂) Accel., g	31	34	Thoracic Trauma Index (TTI)	32	36	Pelvis (PEV) Accel., g	61	56	HIC	51	221
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Pelvis (PEV) Accel., g	61	56																						
HIC	51	221																						
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SECTION 1

PURPOSE AND TEST PROCEDURE

1.1 PURPOSE

This side impact test is conducted as part of the FY' 2002 test program sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-97-C-11033. The purpose of this test was to evaluate side impact protection in a 2002 Honda Odyssey manufactured by Honda of Canada Mfg.

1.2 TEST PROCEDURE

The side impact test was conducted in accordance with the current National Highway Traffic Safety Administration (NHTSA), Office of Vehicle Safety Compliance (OVSC), Laboratory Test Procedure TP-214D-06, dated July 26, 2001 and the corresponding MGA Research Corporation Test Procedure MGA-NHTSA2 with the exception of the test speed, which was at the NCAP High Speed Lateral Impact level (61.2 km/h, approximately 8 km/h faster than compliance speed). The procedures for receiving, inspection, testing, and reporting of test results are described in the test procedures and are not repeated in this report.

MGA does not endorse or certify products. The manufacturer's name appears solely for identification purposes.

SECTION 2

SUMMARY OF SIDE IMPACT TEST

2.1 SUMMARY OF SIDE IMPACT TEST

A model year 2002 Honda Odyssey was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 62.1 km/h. The specified impact velocity range is from 61.2 to 62.7 km/h. The test (target) vehicle was stationary and positioned 63° to the line of forward motion. The weight of the vehicle as tested was 2247.5 kg and the test weight of the MDB was 1362.0 kg. The test was conducted at MGA Research Corporation in Burlington, Wisconsin, on January 9, 2002.

One (1) real-time motion picture camera and nine (9) high-speed motion picture cameras were used to document the impact event. The pre-test and post-test conditions were recorded by one (1) real-time motion picture camera. Camera locations and pertinent camera information are documented in the data sheets. Pre- and post-test photographs of the vehicle and Side Impact Dummies (SID's) can be found in Appendix A. Two 50th percentile adult male SIDs were placed in the driver and left rear passenger designated seating positions according to instructions specified in the OVSC Laboratory Test Procedure dated July 26, 2001. Each SID was instrumented with eleven (11) accelerometers in the following locations:

- Left Upper Rib (LUR) uni-axial accelerometer (Y-axis primary and redundant)
- Left Lower Rib (LLR) uni-axial accelerometer (Y-axis primary and redundant)
- Lower Thoracic Spine (T12) uni-axial accelerometer (Y-axis primary and redundant)
- Pelvic (PEV) section uni-axial accelerometer (Y-axis primary and redundant)
- Head Center of Gravity (CG) tri-axial accelerometers (X,Y and Z Axes).

The test vehicle was instrumented with twenty-one (21) structural accelerometers and the MDB was instrumented with five (5) accelerometers and two (2) contact switches on the bumper to compare left side to right side bumper impact timing. All data channels were recorded with a fully self contained on-board EME Data Acquisition System. The data was digitally sampled at 10,000 samples per second and processed per Appendix V of the Test Procedure.

2.2 GENERAL COMMENTS

The test vehicle sustained a maximum static crush of 332 mm at level 3, 1200 mm rearward of the left vertical impact point. The driver and passenger SID's, Serial Nos. 36 and 37 respectively, were calibrated just prior to this test. The SID's injury criteria is summarized as follows:

Measurements	Units	Driver	Passenger
Thoracic Trauma Index (TTI)	G's	32	36
Peak Pelvic G's (PEV)	G's	61	56
Head Injury Criteria (HIC)	none	51	221

Test summaries and post-test observations are presented in Section 3. The vehicle, camera, and occupant measurements are presented in Section 4. Appendix A contains the still photograph prints. Appendix B contains the driver and passenger SID's, vehicle, and MDB response data traces. Appendix C contains the SID's configuration and performance verification data. Appendix D contains the test equipment information.

TEST NOTES

The following accelerometers were not used for this test:

Left Front Door on Centerline
Mid Rear of Left Front Door
Left Front Door Upper Centerline
Mid Rear of Left Rear door
Left Rear Door Upper Centerline

SECTION 3
SIDE IMPACT DUMMY (SID) AND VEHICLE TEST DATA

Test Vehicle: 2002 Honda Odyssey
 Test Program: 214 Indicant Side Impact

NHTSA No. C25304
 Test Date: 1/9/02

CONVERSION FACTORS USED IN THIS REPORT*

Quantity	Typical Application	English Units	Metric Unit	Multiply By
Mass	Vehicle Weight	lb	kg	0.4536
Linear Velocity	Impact Velocity	mile/h	km/h	1.609
Length or Distance	Measurements	in	mm	25.4
Volume	Fuel Systems	gal	liter	3.785
Volume	Small Fluids	oz	mL	29.573
Pressure	Tire Pressure	lbf/in ²	kPa	7.0
Volume	Liquid	gal	liter	3.785
Temperature	General Use	°F	°C	$=(t_f - 32)/1.8$
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf/ft	Nm	1.355

*Based on the Recommended Practice in SAE J916, May 85

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2002 Honda Odyssey
 Test Program: 214 Indicant Side Impact

NHTSA No. C25304
 Test Date: 1/9/02

TEST VEHICLE INFORMATION

Make	Honda
Model	Odyssey
Body Style	Van
NHTSA No.	C25304
VIN	2HKRL185X2H540000
Color	Maroon
Delivery Date	December 28, 2001
Odometer Reading (mile)	44
Dealer	Wilde Honda
Transmission	4 Speed Automatic w/OD
Final Drive	Front
Number of Cylinders	6
Engine Displacement (L)	3.5
Engine Placement	Lateral

TEST VEHICLE OPTIONS

Front Airbag	Yes
Side Airbags	Yes
Power Windows	Yes
Power Steering	Yes
Power Door Locks	Yes
Tilt Wheel	Yes
Air Conditioning	Yes
Power Brakes	Yes
Disc Brakes, Front	Yes
Disc Brakes, Rear	Yes
Anti-lock Brakes	Yes
AM/FM/Cassette	Yes
Anti-theft System	Yes
Cruise Control	Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Honda of Canada Mfg.
Date of Manufacture	12/01

GVWR (kg)	2570
GAWR Front (kg)	1285
GAWR Rear (kg)	1291

DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	280	280
Cold Pressure (kPa)	252	252
Recommended Tire Size	P205/60R16	P205/60R16
Tire Size on Vehicle	P205/60R16	P205/60R16
Tire Manufacturer	Bridgestone	Bridgestone

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bucket	Bench	
Number Of Occupants x 68.04	2	2	3	476.3
Capacity Wt. (VCW) (kg)				611.0
Cargo Wt. (RCLW) (kg)				134.7

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

Test Vehicle: 2002 Honda Odyssey
 Test Program: 214 Indicant Side Impact

NHTSA No. C25304
 Test Date: 1/9/02

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	573.8	417.8		623.2	548.4	
Right	kg	557.9	409.1		566.5	509.4	
Ratio	%	57.8	42.2		52.9	47.1	
Totals	kg	1131.7	826.9	1958.6	1189.7	1057.8	2247.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1958.6
Weight of 2 P572E ATDs	kg	161.5
Rated Cargo/Luggage Weight (RCLW)	kg	136.1
Calculated Vehicle Target Weight (TVTW)	kg	2256.2

- Actual As Tested Weight (ATW) will be TVTW -5/-10 kg

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG(aft of front axle)
As Delivered	mm	762	762	762	762	1268
As Tested	mm	749	759	727	733	1414
Fully Loaded	mm	748	759	720	733	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	3004
Total Vehicle Length at Left Side	mm	4158
Total Vehicle Length at Centerline	mm	5072
Total Vehicle Length at Right Side	mm	4158
Total Vehicle Width	mm	1918
Weight of Ballast in Cargo Area	kg	104.3
Amount of Stoddard Solvent in Fuel Tank	liters	70.4

TEST VEHICLE VERTICAL IMPACT LINE DATA

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	3004
Target Impact Point Aft of Front Axle	mm	508
Actual Impact Point Aft of Front Axle	mm	508

DATA SHEET NO. 1...(continued)

GENERAL TEST AND VEHICLE PARAMETER DATA

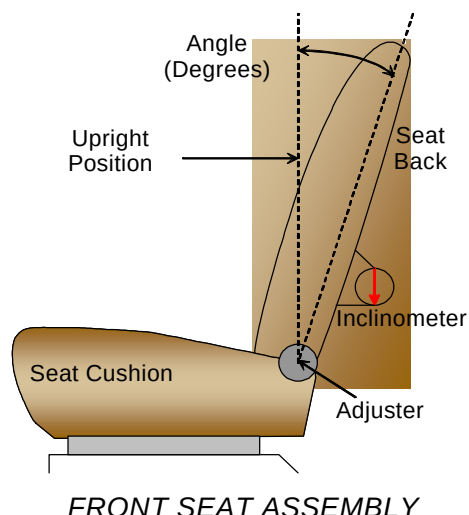
Test Vehicle: 2002 Honda Odyssey
Test Program: 214 Indicant Side Impact

NHTSA No. C25304
Test Date: 1/9/02

NORMAL DESIGN RIDING POSITION

The driver seat is positioned to the manufacturer's designated angle. The procedure for the seat is as follows: Drivers seat back is placed in the 5th latching position from the 1st locking position (initial position is 0). The seat back position of the second seat is the 9th latching position from rearmost locking position.

Driver seat back angle: 5th Notch
Passenger seat back angle: 9th Notch



SEAT FORE/AFT POSITIONS

The driver's and passenger's seat are manually operated. The fore/aft is set to the middle position for the driver's seat. The first detent is numbered "1".

Driver seat fore/aft total travel: 25 detents
Passenger seat fore/aft total travel: 19 detents
Driver seat fore/aft position: 13th detent
Passenger seat fore/aft position: 10th detent

SEAT BELT UPPER ANCHORAGE

The test vehicle is equipped with adjustable "D" ring anchorage for the driver's seat position. There are 4 positions or detents, with the uppermost position numbered "1". The driver's "D" ring anchorage is placed in position 1 or uppermost.

DATA SHEET NO. 1...(continued)

TEST VEHICLE INFORMATION

Test Vehicle: 2002 Honda Odyssey
Test Program: 214 Indicant Side Impact

NHTSA No. C25304
Test Date: 1/9/02

FUEL TANK CAPACITY DATA

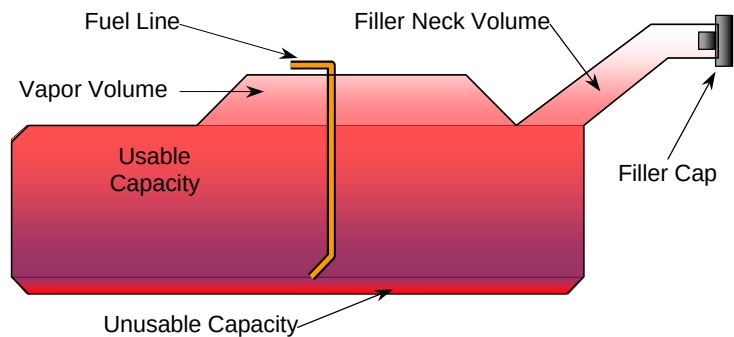
The "Usable Capacity" of the standard equipment fuel tank is: 75.7 liters

The "Usable Capacity" of any optional equipment fuel tank is: N/A liters

92-94% of "Usable Capacity" for certification to FMVSS 301 requirements: 69.6 to 71.2 liters

Actual amount of Stoddard solvent added to vehicle for certification test: 70.4 liters

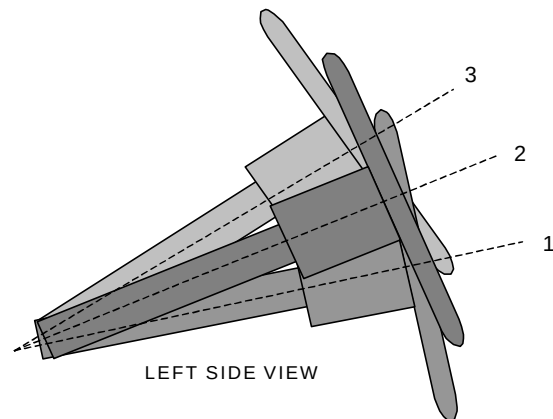
The test vehicle is equipped with an electric fuel pump.



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes, when it is moved through its full range of motion. A aluminum plate is placed across the rim of the steering wheel, and inclinometer is placed onto the plate and the angle is measured.



STEERING COLUMN ASSEMBLY

Lowermost, position 1: 28.0°

Geometric center, position 2: 29.9°

Uppermost, position 3: 31.8°

DATA SHEET NO. 2
TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle: 2002 Honda Odyssey
 Test Program: 214 Indicant Side Impact

NHTSA No. C25304
 Test Date: 1/9/02

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	573.8	417.8		623.2	548.4	
Right	kg	557.9	409.1		566.5	509.4	
Weight Ratio	%	57.8	42.2		52.9	47.1	
Totals	kg	1131.7	826.9	1958.6	1189.7	1057.8	2247.5

MAXIMUM EXTERIOR STATIC CRUSH

Level	Measured Parameter	Units	Maximum Crush	Above Ground
Level 1	Sill Top Height	mm	133	275
Level 2	Occupant H-Point	mm	305	668
Level 3	Mid Door	mm	332	713
Level 4	Window Sill	mm	224	1037
Level 5	Window Top	mm	35	1624
Level 3	Maximum Penetration	mm	332	713

INSTRUMENTATION

Driver SID Accelerometers	11
Passenger SID Accelerometers	11
Vehicle Structure Accelerometers	21
MDB Accelerometers	5
Total	48

DATA SHEET NO. 3**MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS**

Test Vehicle: 2002 Honda Odyssey
 Test Program: 214 Indicant Side Impact

NHTSA No. C25304
 Test Date: 1/9/02

MDB SPECIFICATIONS

Measurement Description	Length (mm)
Overall Width of Framework Carriage	1252
Overall Length Including Honeycomb Face	4115
Wheel base of Framework Carriage	2590
C.G. Location aft of Front Axle	1127

MDB WEIGHTS

	Units	Front Axle	Rear Axle	Total
Left	kg	395.1	293.8	
Right	kg	385.7	287.4	
Ratio	%	57.3	42.7	
Totals	kg	780.8	581.2	1362.0

SPEED AND IMPACT ANGLE DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.2 to 62.7	62.1
Trap No. 2 Velocity (Redundant)	km/h	61.2 to 62.7	61.8
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	89.7

MAXIMUM STATIC CRUSH OF HONEYCOMB FACE

Vertical Location			From Centerline		Max. Crush
Row	Description	Height	Distance	Direction	
A	Center of Bumper (mm)	813	800	Right	225
B	Top of Bumper (mm)	686	700	Right	135
C	Mid Level (mm)	533	800	Right	119
D	Top of Stack (mm)	432	800	Left	148

MDB INSTRUMENTATION AND CAMERAS

Accelerometers	5
Contact Switches	2
High Speed Cameras	2

DATA SHEET NO. 4
POST TEST OBSERVATIONS

Test Vehicle: 2002 Honda Odyssey
Test Program: 214 Indicant Side Impact

NHTSA No. C25304
Test Date: 1/9/02

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Front Seat SID	Rear Seat SID
Dummy Type / Serial No.	SID / 36	SID / 37
Head Contact	Headrest / B-pillar	Headrest
Upper Torso Contact	Airbag	Window sill
Lower Torso Contact	Airbag	Mid door
Left Knee Contact	Lower door	Lower door
Right Knee Contact	Left knee	Left knee

POST TEST DOOR OPENING AND SEAT TRACK INFORMATION

Description	Front	Rear
Left Side Door Opening	Remained closed	Remained closed
Right Side Door Opening	Remained closed	Remained closed
Seat Movement	None	None
Seat Back Failure	None	None

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	None
Sill Separation	None
Windshield Damage	Drivers side
Window Damage	Left front and rear
Other Notable Effects	Gas door opened

AIRBAG DEPLOYMENT

	Driver	Front Passenger	Rear Passenger
Front	No	No	None
Side	Yes	No	None

MDB LEFT EDGE IMPACT POINT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 50	0
Vertical Offset	mm	+/-20	2 down

SECTION 4
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 5

SID INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2002 Honda Odyssey
 Test Program: 214 Indicant Side Impact

NHTSA No. C25304
 Test Date: 1/9/02

THORAX AND PELVIS PEAK ACCELERATIONS (FIR 100 Filtered)

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Upper Rib (LUR)	Y	G's	33.9	61	5.9	94	26.8	66	3.9	112
Upper Rib (LUR)(R)	Y	G's	35.0	60	6.0	94	28.3	66	4.2	111
Lower Rib (LLR)	Y	G's	32.0	60	5.8	94	37.5	51	3.6	113
Lower Rib (LLR) (R)	Y	G's	31.1	60	5.8	94	36.0	51	3.0	112
Lower Spine (T ₁₂)	Y	G's	31.0	49	5.4	101	33.9	51	5.5	76
Lower Spine (T ₁₂) (R)	Y	G's	29.8	49	6.0	101	34.3	51	6.2	76
Pelvis (PEV)	Y	G's	60.5	40	7.3	57	56.0	48	13.1	77
Pelvis (PEV) (R)	Y	G's	59.5	40	7.4	57	56.7	48	13.0	77

THORACIC TRAUMA INDEX (TTI) AND PELVIC ACCELERATION (FIR 100 Filtered)

Location	Driver				Passenger			
	LUR	T ₁₂	TTI(g)	PEV(g)	LLR	T ₁₂	TTI(g)	PEV(g)
Rib, Spine, and Pelvis	33.9	31.0	32	60.5	37.5	33.9	36	56.0
Rib, Spine, and Pelvis (R)	35.0	29.8	32	59.5	36.0	34.3	35	56.7

HEAD CG PEAK ACCELERATIONS (SAE CLASS 1000 Filtered)

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	22.2	132	12.0	54	18.9	89	45.0	88
Head CG	Y	G's	16.0	53	2.1	183	74.7	88	15.8	88
Head CG	Z	G's	18.5	62	1.9	143	121.0	88	3.3	35
Head CG Resultant		G's	22.7	62			147.5	88		

HEAD INJURY CRITERIA (SAE CLASS 1000 Filtered)

Location	Driver				Passenger			
	HIC	T ¹	T ²	Avg G's	HIC	T ¹	T ²	Avg G's
Head CG	51	52.4	88.4	18.2	221	81.4	96.3	46.5

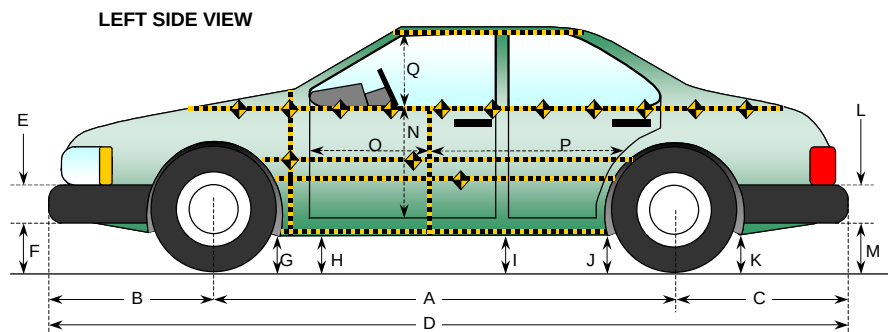
Positive Acceleration Polarities: Longitudinal (X) = Forward
 (Conforms to SAE J211) Lateral (Y) = Right
 Vertical (Z) = Down

DATA SHEET NO. 6

VEHICLE PRE-TEST AND POST-TEST MEASUREMENTS

Test Vehicle: 2002 Honda Odyssey
 Test Program: 214 Indicant Side Impact

NHTSA No. C25304
 Test Date: 1/9/02



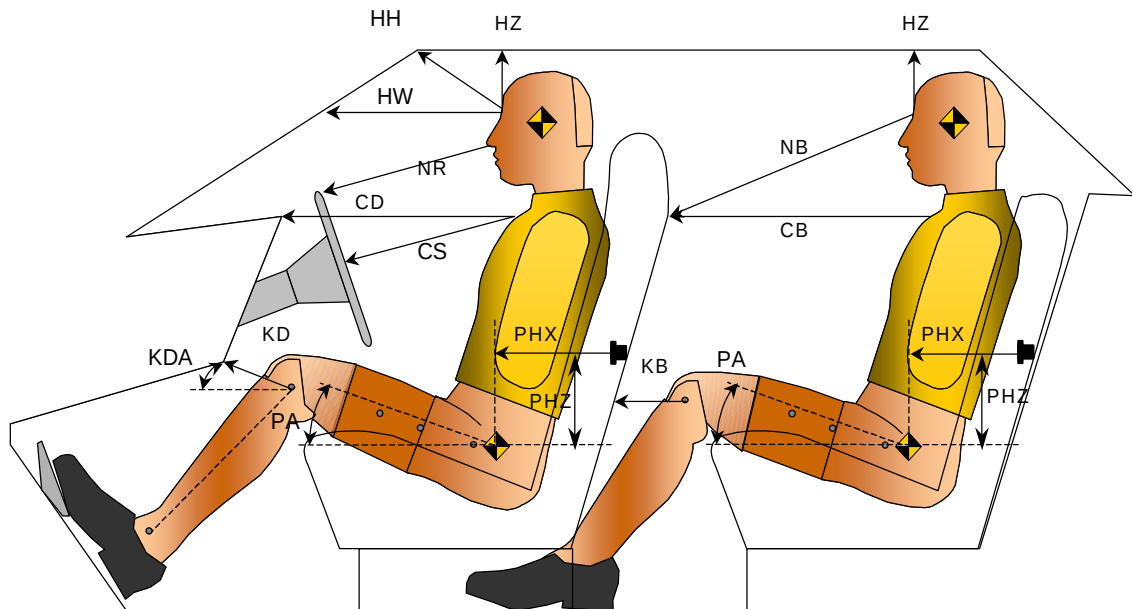
All Measurements in mm

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	3004	2979	-25
B	Front Axle to FSOV	964	948	-16
C	Rear Axle to RSOV	1104	1125	21
D	Total Length at Centerline	5072	5052	-20
E	Front Bumper Thickness	130	130	0
F	Front Bumper Bottom to Ground	446	463	17
G	Sill Height at Front Wheel Well	178	225	47
H	Sill Height at Front Door Leading Edge	177	221	44
I	Sill Height at "B" Pillar	177	223	46
J1	Sill Height at Rear Wheel Well	161	259	98
J2	Pinch Weld Height at Rear Wheel Well	177	260	83
K	Sill Height Aft of Rear Wheel Well	268	322	54
L	Rear Bumper Thickness	155	155	0
M	Rear Bumper Bottom to Ground	344	401	57
N	Sill Height to Window Bottom Sill	850	632	-218
O	Front Door Leading Edge to Impact CL	878	828	-50
P	Rear Door Trailing Edge to Impact CL	1213	1174	-39
Q	Front Window Opening	566	581	15
R	Right Side Length	4158	4165	7
S	Left Side Length	4158	4123	-35
T	Vehicle Width at "B" Post	1918	1670	-248

DATA SHEET NO. 7
SID LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2002 Honda Odyssey
 Test Program: 214 Indicant Side Impact

NHTSA No. C25304
 Test Date: 1/9/02

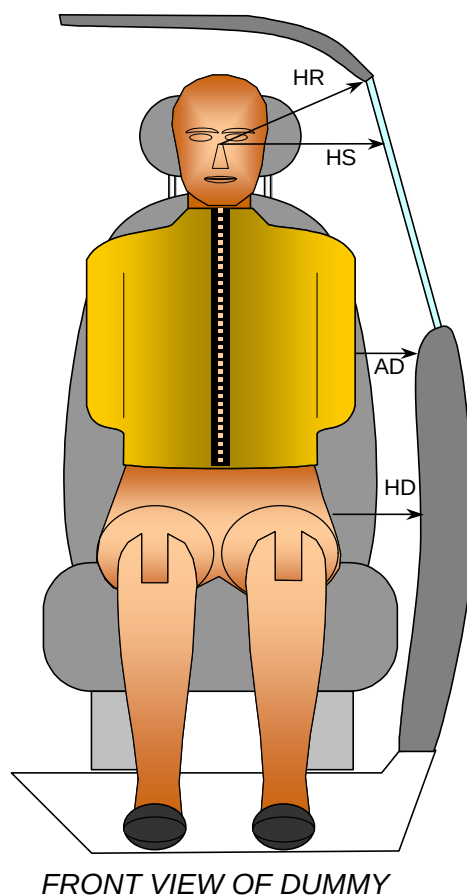


Driver Code	Pass. Code	Measurement Description	Driver 36		Passenger 37	
			Length(mm)	Angle(°)	Length(mm)	Angle(°)
HH		Head to Header	478			
HW		Head to Windshield	727			
HZ	HZ	Head to Roof	217		206	
NR	NB	Nose to Rim/Nose to Seatback	514		619	
CD	CB	Chest to Dash or Seatback	589		531	
CS		Chest to Steering Wheel	370			
KDL	KBL	Left Knee to Dash or Seatback	139	0	284	0
KDR	KBR	Right Knee to Dash or Seatback	148	0	256	0
PA	PA	Pelvic Angle	24.2		24.3	
PHX	PHX	H-Point to Striker (X-Axis)	284		257	
PHZ	PHZ	H-Point to Striker (Z-Axis)	72		16	

DATA SHEET NO. 8
SID LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2002 Honda Odyssey
 Test Program: 214 Indicant Side Impact

NHTSA No. C25304
 Test Date: 1/9/02



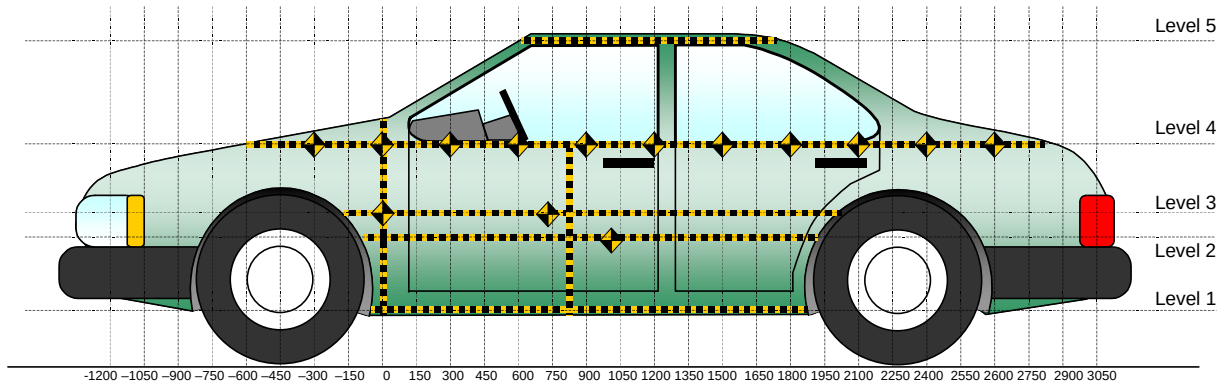
FRONT VIEW OF DUMMY

Code	Measurement Description	Units	Driver 36	Passenger 37
HR	Head to Side Header	mm	201	180
HS	Head to Side Window	mm	314	332
AD	Arm to Door	mm	119	159
HD	H-Point to Door	mm	149	258

DATA SHEET NO. 9 **VEHICLE SIDE MEASUREMENTS**

Test Vehicle: 2002 Honda Odyssey
 Test Program: 214 Indicant Side Impact

NHTSA No. C25304
 Test Date: 1/9/02



All Measurements Shown in mm

LEFT SIDE VIEW

Measurements are taken with vehicle in the as tested condition.
 Measurements along the vertical 800 mm.
 All measurements below in mm.

Level	Measurement Description	Height Above Ground
5	Window	1624
4	Window Sill	1037
3	Mid Door	713
2	Occupant H-Point	668
1	Sill Top	275

DATA SHEET NO. 10

VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2002 Honda Odyssey
Test Program: 214 Inducant Side Impact

NHTSA No. C25304
Test Date: 1/9/02

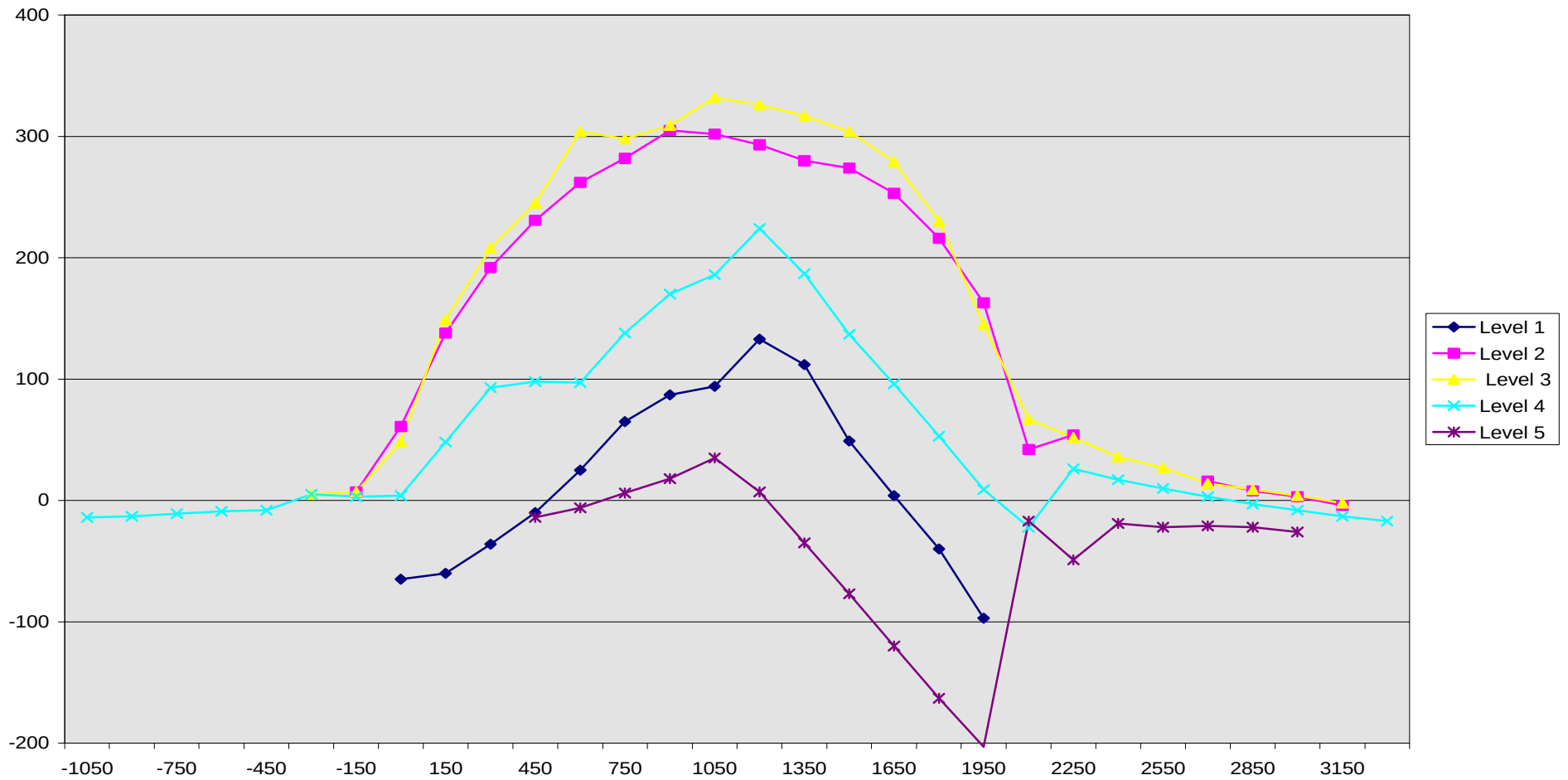
	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-1050				301					287					-14	
-900				277					264					-13	
-750				258					247					-11	
-600				237					228					-9	
-450				223					215					-8	
-300			140	211				145	216				5	5	
-150		144	145	203			151	152	206			7	7	3	
0	182	147	147	198		117	208	195	202		-65	61	48	4	
150	180	146	145	196		120	284	294	244		-60	138	149	48	
300	180	144	144	192		144	336	352	285		-36	192	208	93	
450	180	143	143	191	458	170	374	388	289	444	-10	231	245	98	-14
600	179	142	142	190	448	204	404	446	287	442	25	262	304	97	-6
750	178	142	142	188	451	243	424	440	326	457	65	282	298	138	6
900	178	141	141	188	455	265	446	450	358	473	87	305	309	170	18
1050	180	142	141	189	459	274	444	473	375	494	94	302	332	186	35
1200	181	143	142	190	460	314	436	468	414	467	133	293	326	224	7
1350	182	144	143	192	461	294	424	460	379	426	112	280	317	187	-35
1500	184	146	145	193	463	233	420	449	330	386	49	274	304	137	-77
1650	186	148	147	195	465	190	401	426	291	345	4	253	279	96	-120
1800	188	150	149	198	467	148	366	379	251	304	-40	216	230	53	-163
1950	191	152	151	201	467	94	315	296	210	264	-97	163	145	9	-203
2100		181	153	204	469		223	220	182	452		42	67	-22	-17
2250		141	145	210	469		195	197	236	420		54	52	26	-49
2400			141	214	470			177	231	451			36	17	-19
2550			141	219	474			168	229	452			27	10	-22
2700		143	148	225	474		159	162	228	453		16	14	3	-21
2850		162	166	232	479		170	175	229	457		8	9	-3	-22
3000		178	180	238	489		181	184	230	463		3	4	-8	-26
3150		195	195	251			191	193	238			-4	-2	-13	
3300				273					256					-17	

Reference plane is parallel to test vehicle longitudinal centerline.
Given dimensions = Reference plane to car body

DATA SHEET NO. 10...(continued)
VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2002 Honda Odyssey
Test Program: 214 Indicant Side Impact

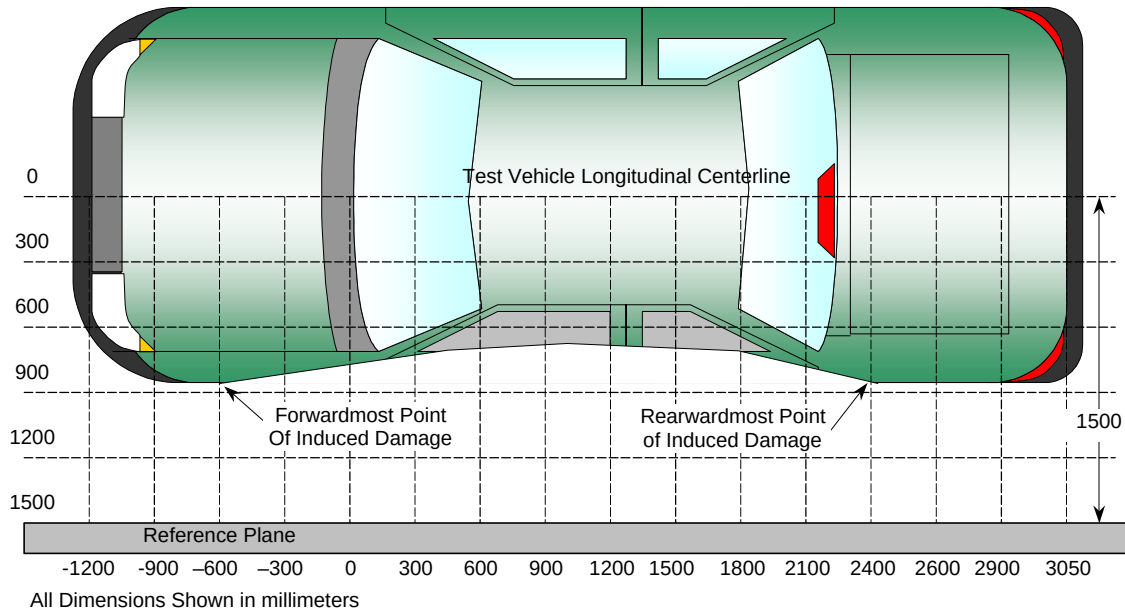
NHTSA No. C25304
Test Date: 1/9/02



DATA SHEET NO. 11
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2002 Honda Odyssey
 Test Program: 214 Indicant Side Impact

NHTSA No. C25304
 Test Date: 1/9/02



TOP VIEW

Damage Profile Distances

DPD	Distance from Impact Point in mm	Level	Pre-Test (mm)	Post-Test (mm)	Max Static Crush (mm)
1	2700 mm	4	225	228	3
2	2130 mm	2	149	219	70
3	1485 mm	3	144	285	141
4	963 mm	2	141	288	147
5	406 mm	3	143	219	76
6	-150 mm	4	203	203	0

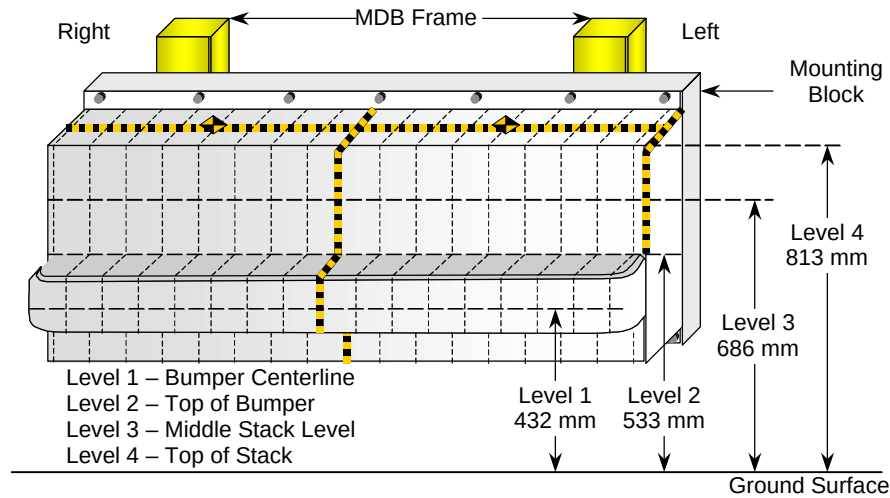
Reference plane is parallel to test vehicle longitudinal centerline.
 Given dimensions = Reference plane to car body.

DATA SHEET NO. 12

DEFORMABLE BARRIER HONEYCOMB FACE STATIC CRUSH

Test Vehicle: 2002 Honda Odyssey
 Test Program: 214 Indicant Side Impact

NHTSA No. C25304
 Test Date: 1/9/02



DEFORMABLE BARRIER STATIC CRUSH

Stack Level	Distance Right of Center								C _L	Distance Left of Center							
	800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
1	225	220	215	209	207	207	213	202	195	185	184	180	184	169	198	166	163
2	126	135	109	97	89	92	93	82	83	77	83	86	84	83	78	94	94
3	119	91	67	46	40	34	34	59	65	42	32	30	33	42	59	82	111
4	139	100	69	41	27	24	48	79	78	61	53	58	60	72	87	114	148

All Dimensions in mm

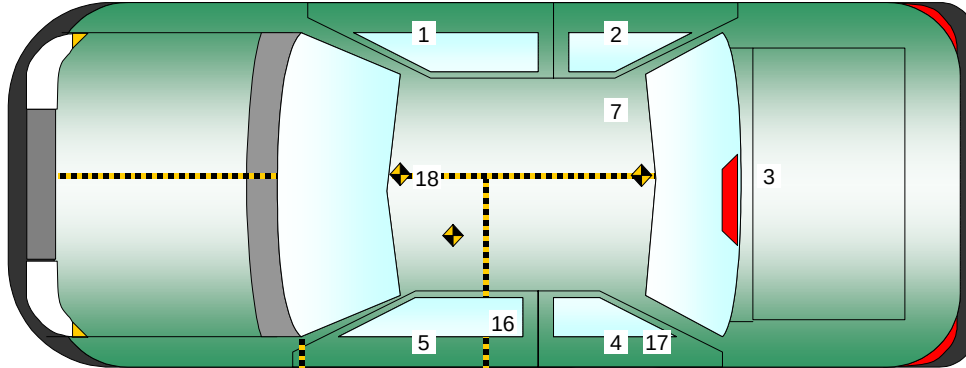
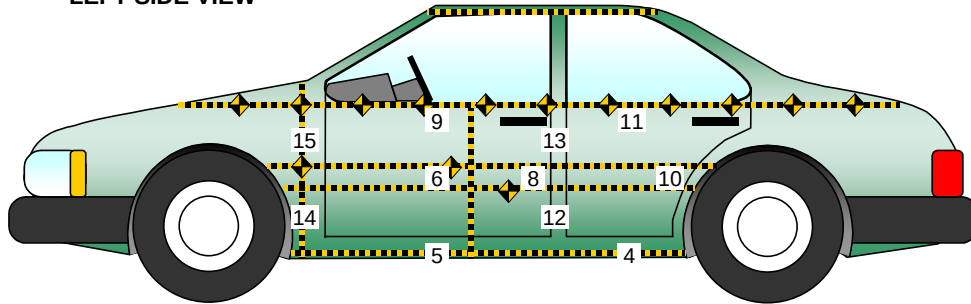
DATA SHEET NO. 13

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Test Vehicle: 2002 Honda Odyssey
 Test Program: 214 Indicant Side Impact

NHTSA No. C25304
 Test Date: 1/9/02

LEFT SIDE VIEW



No.	Location
1	Right Sill at Front Seat
2	Right Sill at Rear Seat
3	Rear Floorpan Above Axle
4	Left Sill at Rear Door
5	Left Sill at Front Door
6	Left Front Door Centerline
7	Right Rear Occupant Compartment
8	Left Front Door Mid-Rear
9	Left Front Door Upper Centerline

No.	Location
10	Left Rear Door Mid-Rear
11	Left Rear Door Upper Centerline
12	Left Lower B-Post
13	Left Middle B-Post
14	Left Lower A-Post
15	Left Middle A-Post
16	Front Seat Track
17	Rear Seat Track or Structure
18	Vehicle CG

DATA SHEET NO. 13... (continued)

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY

Test Vehicle: 2002 Honda Odyssey
 Test Program: 214 Indicant Side Impact

NHTSA No. C25304
 Test Date: 1/9/02

VEHICLE ACCELEROMETER PEAK DATA AND PRE-TEST LOCATIONS

Loc. No.	Accelerometer Location	Measurements (mm)			Peak Values (G's)				
		X	Y	Z	Axis	Max	Time	Min	Time
1	Right Sill at Front Seat	3073	800	-226	X	3.2	71	5.0	21
					Y	21.1	8	2.7	144
					Z	3.2	66	10.8	10
					RES	22.7	8		
2	Right Sill at Rear Seat	2023	800	-233	X	3.4	71	4.7	20
					Y	23.9	9	2.8	145
					Z	3.1	65	9.1	20
					RES	24.6	9		
3	Rear Floorpan Above Axle	790	0	-450	X	4.4	47	5.8	16
					Y	16.4	12	2.0	151
					Z	4.5	60	2.5	51
					RES	16.4	12		
4	Left Sill at Rear Door	2044	-820	-225	Y	35.0	6	16.9	13
5	Left Sill at Front Door	3086	-820	-225	Y	29.1	8	3.7	139
7	Rear Occupant Compartment	2277	330	-400	Y	23.4	9	2.7	143
12	B-Post Lower	2542	-706	-400	Y	45.8	7	15.8	13
13	B-Post Middle	2526	-775	-1080	Y	130.7	7	97.7	54
14	A-Post Lower	2512	-820	-412	Y	78.6	6	48.8	62
15	A-Post Middle	3640	-850	-1130	Y	14.7	9	1.7	141
16	Front Seat Track	2600	-664	-527	Y	105.5	23	24.0	38
17	Rear Seat Track or Structure	1744	-581	-449	Y	42.5	30	23.0	65
18	Vehicle CG	2785	0	-415	X	2.0	72	6.2	28
					Y	22.4	7	2.9	144
					Z	13.9	14	7.1	53
					RES	23.0	7		

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

DATA SHEET NO. 14

MDB ACCELEROMETER LOCATIONS AND DATA SUMMARY

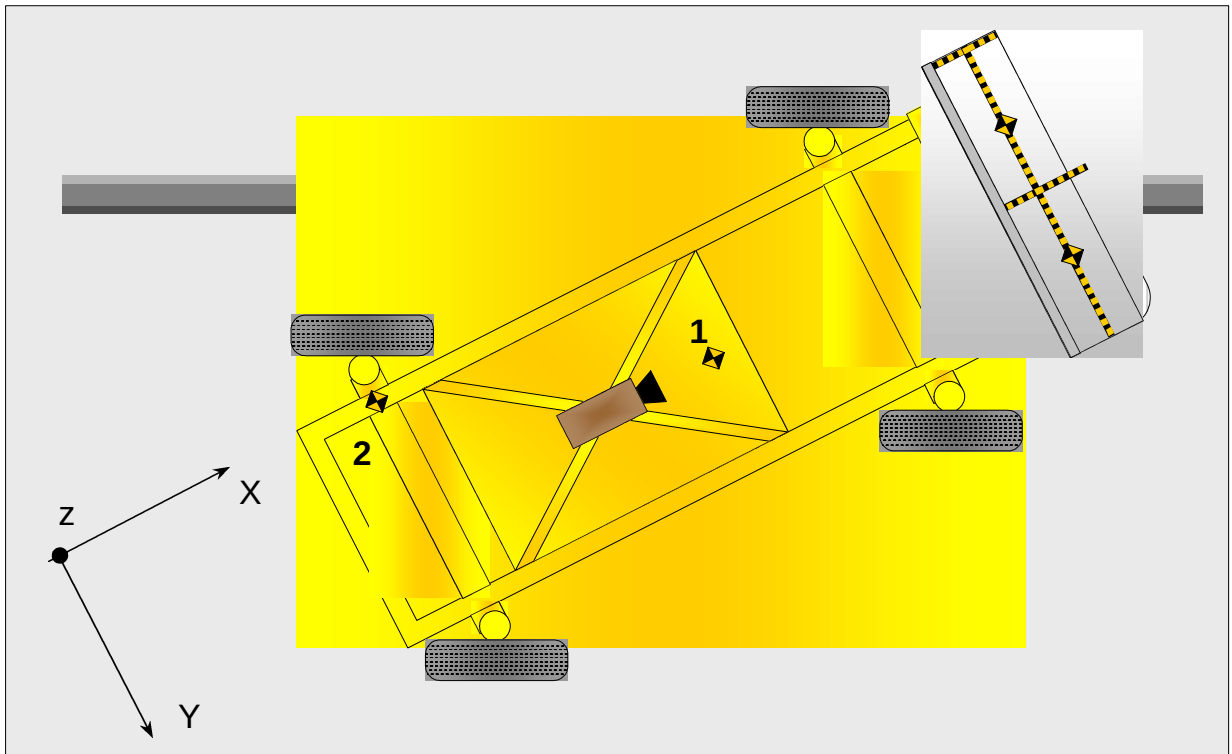
Test Vehicle: 2002 Honda Odyssey
 Test Program: 214 Indicant Side Impact

NHTSA No. C25304
 Test Date: 1/9/02

MDB ACCELEROMETER PEAK DATA AND LOCATIONS

Loc. No.	Accelerometer Location	Measurement (mm)			Peak Values (G's)				
		X	Y	Z	Axis	Max	Time	Min	Time
1	MDB CG	-1092	0	-483	X	2.1	121	20.1	41
					Y	2.2	20	4.7	56
					Z	20.2	71	22.3	18
					RES	27.3	18		
2	MDB Rear	-2591	-625	-622	X	2.8	122	23.3	42
					Y	5.2	25	2.0	147

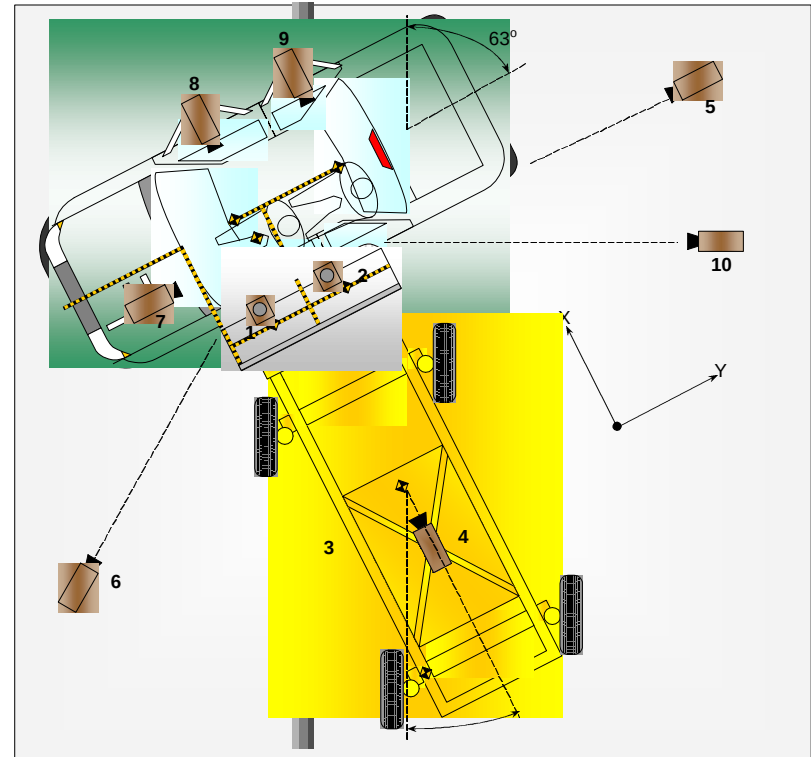
Reference Points X - MDB Front Axle (+ forward)
 Y - MDB Centerline (+ to right)
 Z - Ground Plane (+ down)



DATA SHEET NO. 15
HIGH SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2002 Honda Odyssey
 Test Program: 214 Indicant Side Impact

NHTSA No. C25304
 Test Date: 1/9/02



No.	Camera View	Location (mm)			Lens (mm)	Film Speed (fps)
		X	Y	Z		
1	Overhead Overall	-260	1140	5000	7.5	1093
2	Overhead Close-up	-690	-350	5000	25	1026
3	MDB Onboard, Impact Point Close-up				35	1020
4	MDB Onboard, Centerline of Impact				13	1010
5	Right Side, Ground Level, Overall	3958	8789	1615	25	1053
6	Left Side, Ground Level, Overall	-1463	-2340	1685	13	1064
7	Vehicle Onboard Front SID, Front				13	513
8	Vehicle Onboard Front SID, Side				7.5	513
9	Vehicle Onboard Rear SID, Side				13	518
10	Real Time Coverage					

Reference Points X - Impact Line
 Y - MDB Left Edge Impact Point
 Z - Ground Plane

DATA SHEET NO. 16

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Test Vehicle: 2002 Honda Odyssey
Test Program: 214 Indicant Side Impact

NHTSA No. C25304
Test Date: 1/9/02

Test Time: 11:31 AM

Temperature at Time of Impact: 20.6°C

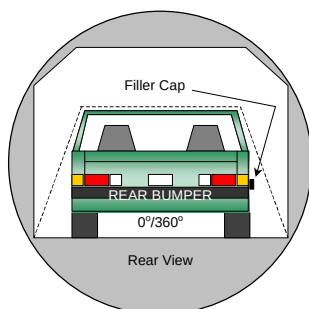
Stoddard Solvent Spillage Measurements

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

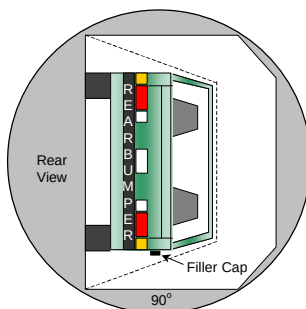
DATA SHEET NO. 17
FMVSS 301 STATIC ROLLOVER DATA SHEET

Test Vehicle: 2002 Honda Odyssey
 Test Program: 214 Indicant Side Impact

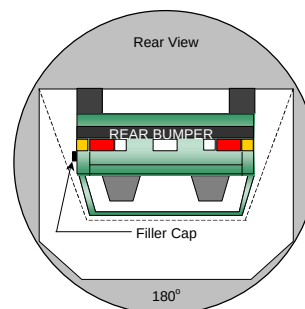
NHTSA No. C25304
 Test Date: 1/9/02



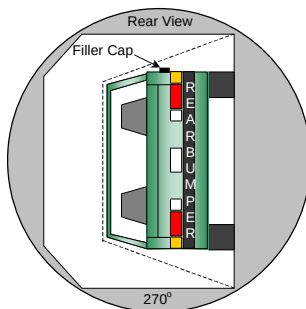
0° to 90°



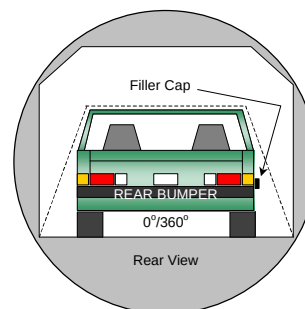
90° to 180°



180° to 270°



270° to 360°



1. The specified fixture rollover rate for each 90° of rotation is 60 to 180 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. Details of Stoddard Solvent Spillage locations:

Rollover Test Phase	Rotation Time (sec.)	Hold Time (sec.)	Spillage (oz.)
0° to 90°	160	300	0
90° to 180°	158	300	0
180° to 270°	142	300	0
270° to 360°	159	300	0

APPENDIX A
PHOTOGRAPHS

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Pre-Test Front View of Test Vehicle



Post-Test Front View of Test Vehicle



Post-Test Rear View of Test Vehicle



Pre-Test Left Side View of Test Vehicle

A-5.



Post-Test Left Side View of Test Vehicle



Pre-Test MDB Positioned Against Vehicle (left side)



Pre-Test MDB Positioned Against Vehicle (right side)



Pre-Test MDB Positioned Against Vehicle Overhead View



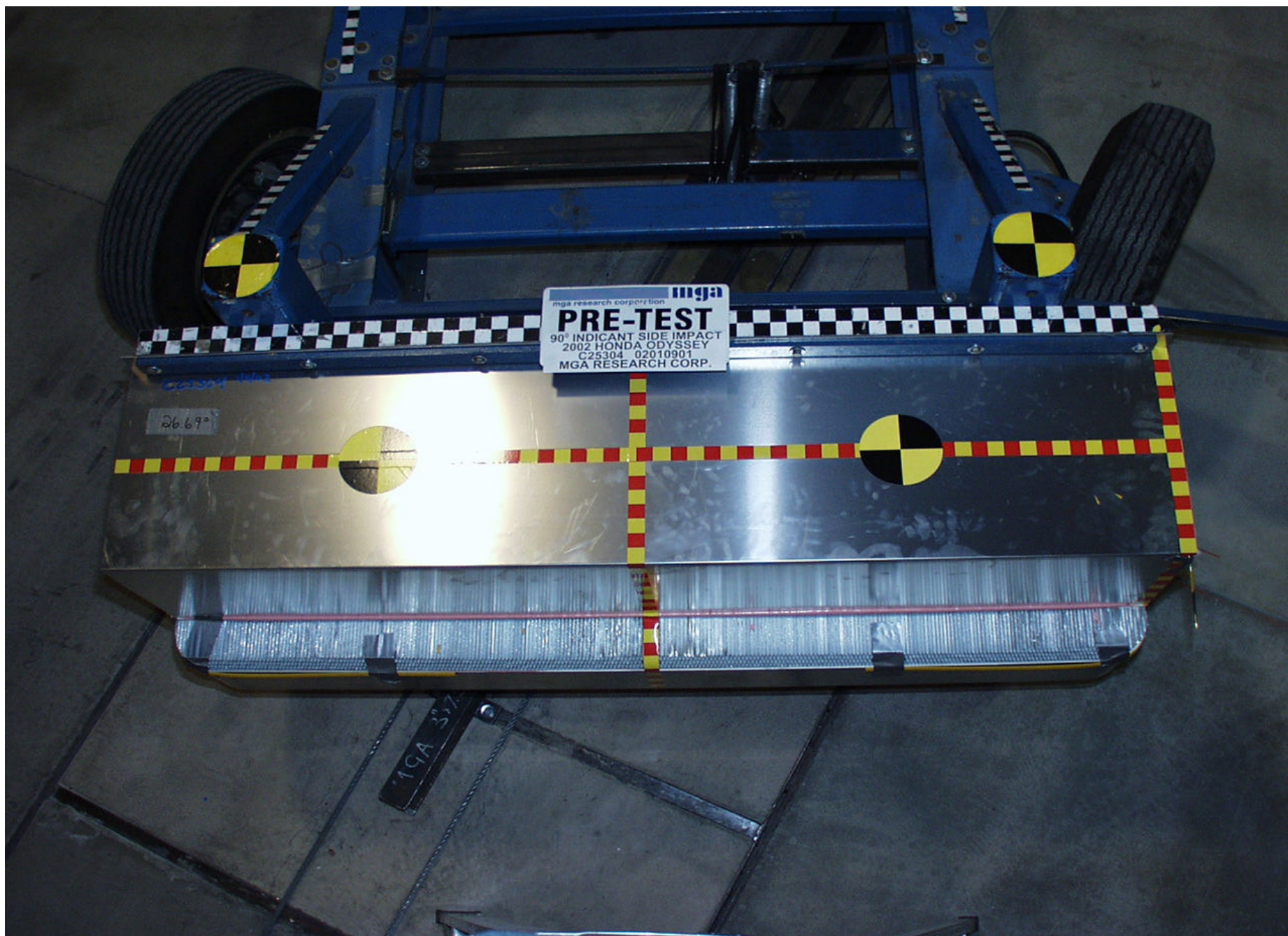
Post-Test MDB and Vehicle (left side)



Post-Test MDB and Vehicle (right side)



Post-Test MDB and Vehicle Overhead View



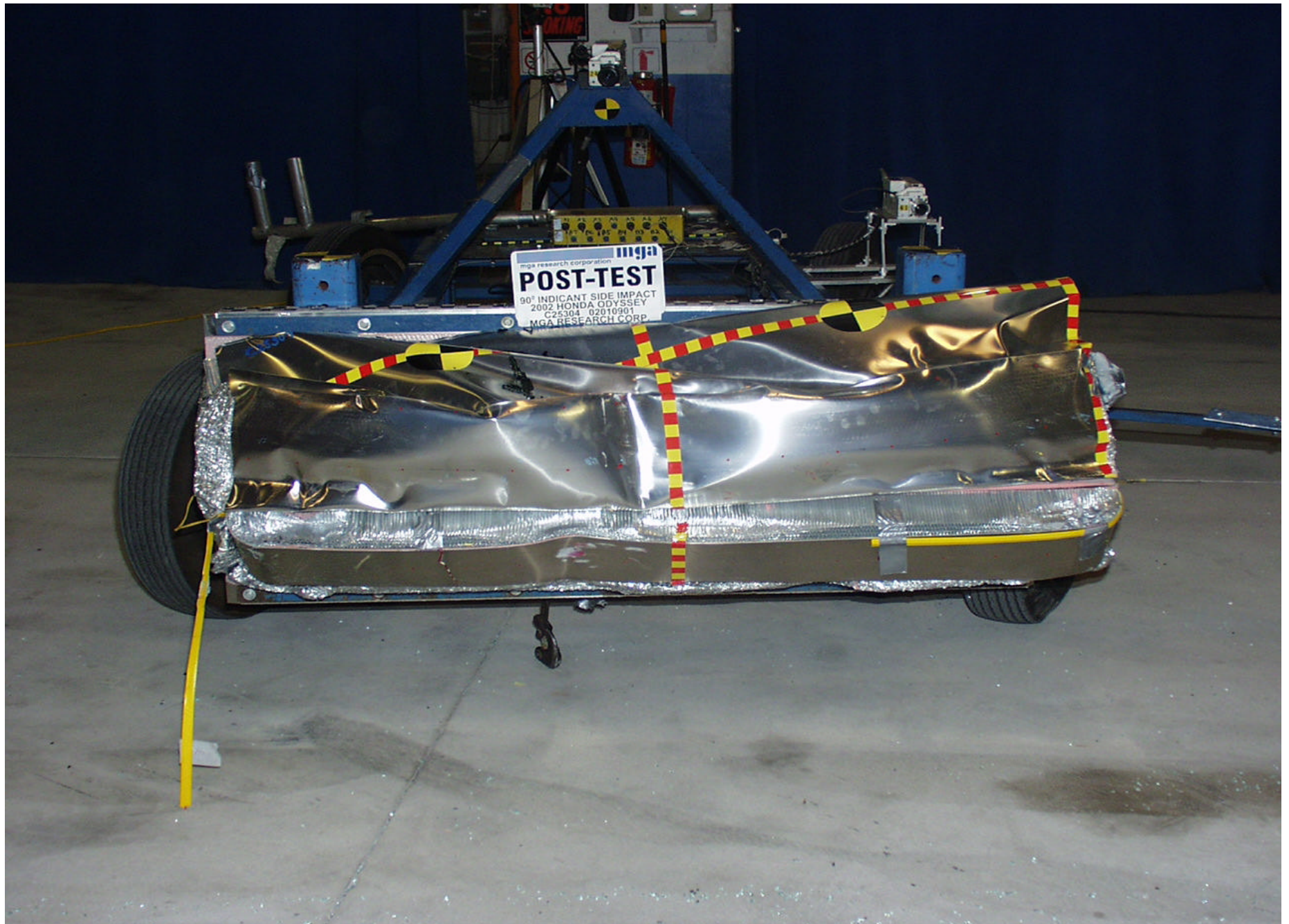
Pre-Test MDB Top View



Post-Test MDB Top View



Pre-Test MDB Front View



Post-Test MDB Front View



Pre-Test MDB Right Side View



Post-Test MDB Right Side View



Pre-Test MDB Left Side View



Post-Test MDB Left Side View



Pre-Test Driver Dummy Right Side View



Post-Test Driver Dummy Right Side View



Pre-Test Driver Dummy Left Side View



Post-Test Driver Dummy Left Side View



Pre-Test Driver Dummy Left Side View (Door Open)



Pre-Test Driver Dummy Shoulder and Door Top View



Post-Test Driver Dummy Shoulder and Door Top View



Post-Test Driver Dummy Contact



Post-Test Driver Dummy Head Contact



Pre-Test Passenger Dummy Right Side View



Pre-Test Passenger Dummy Left Side View



Post-Test Passenger Dummy Left Side View



Pre-Test Passenger Dummy Left Side View (Door Open)



Pre-Test Passenger Dummy Shoulder and Door Top View



Post-Test Passenger Dummy Shoulder and Door Top View



Post-Test Passenger Dummy Contact



Post-Test Passenger Dummy Head Contact



Pre-Test Left Front Impact Point on Vehicle



Post-Test Left Front Impact Point on Vehicle



Impact



Vehicle Certification Label



Tire Placard

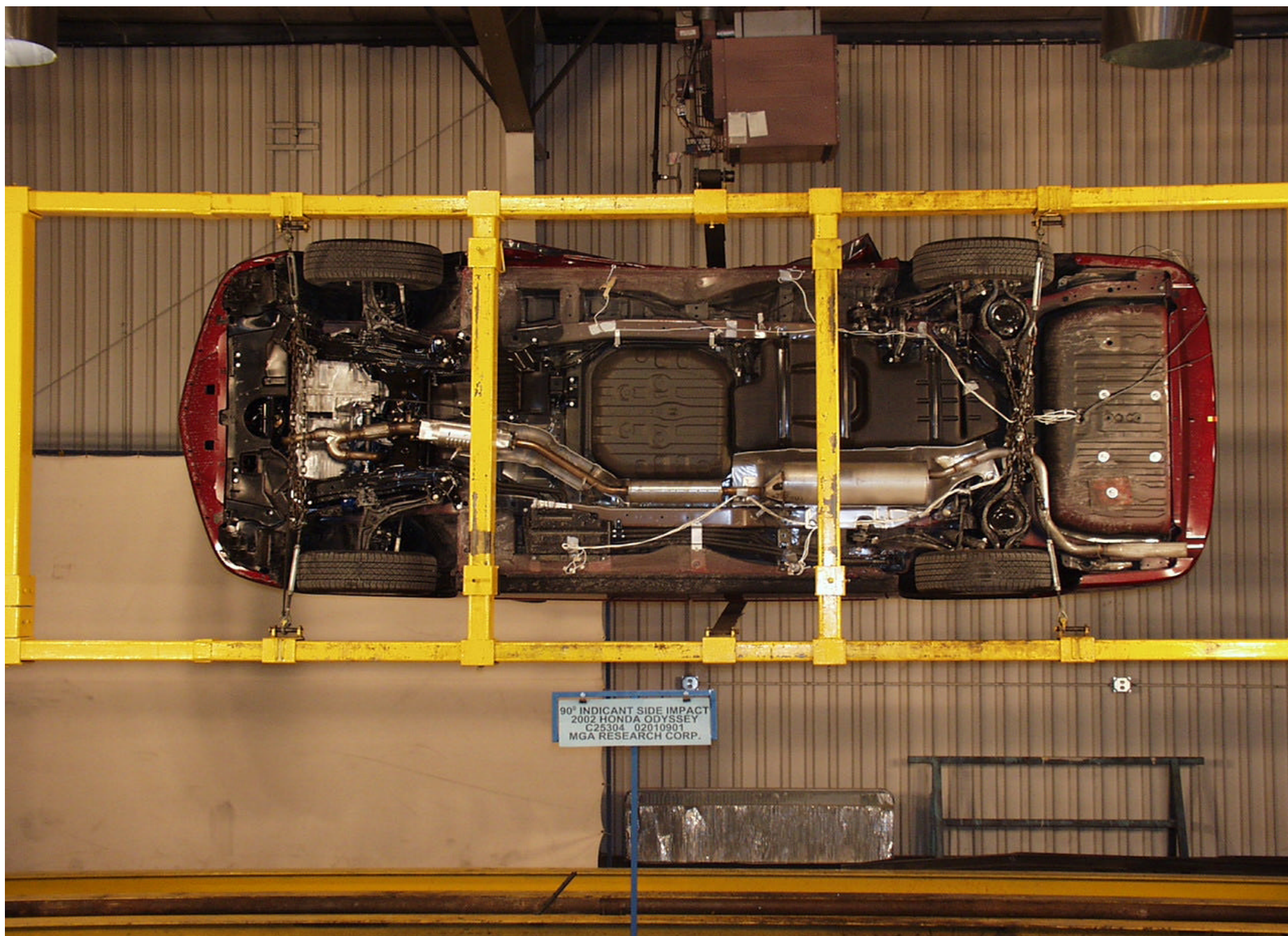


Rollover 90



Rollover 180

A-44.



Rollover 270



APPENDIX B

SID, VEHICLE , AND MDB RESPONSE DATA

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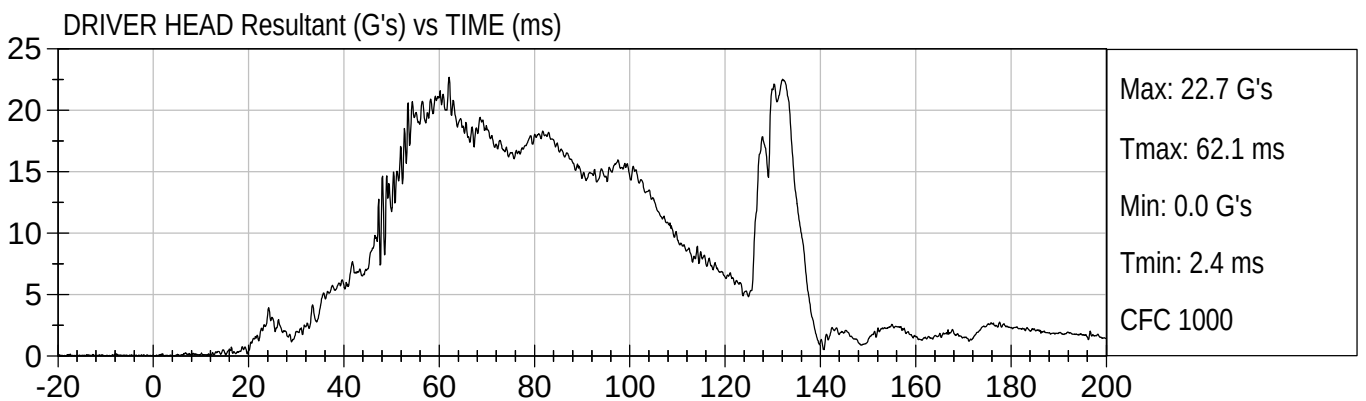
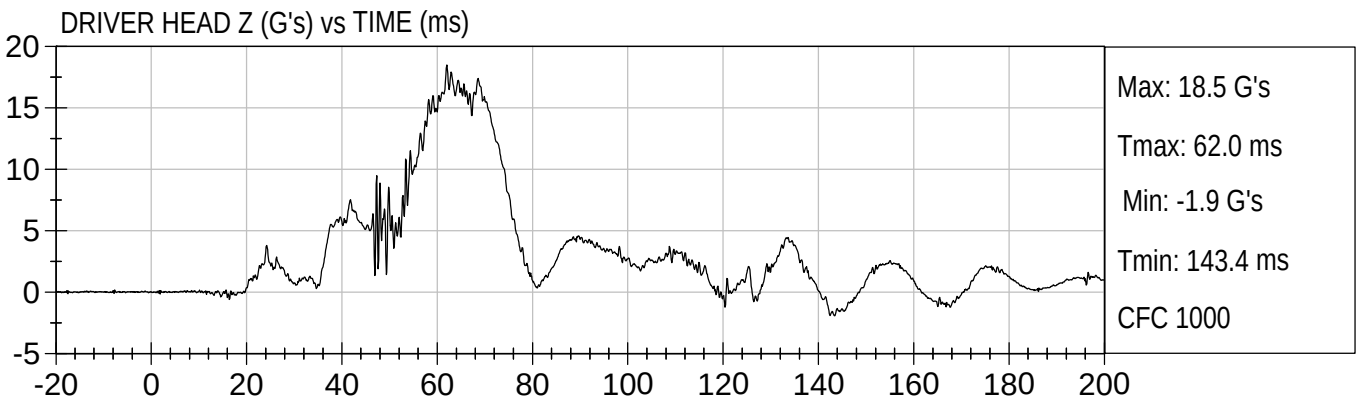
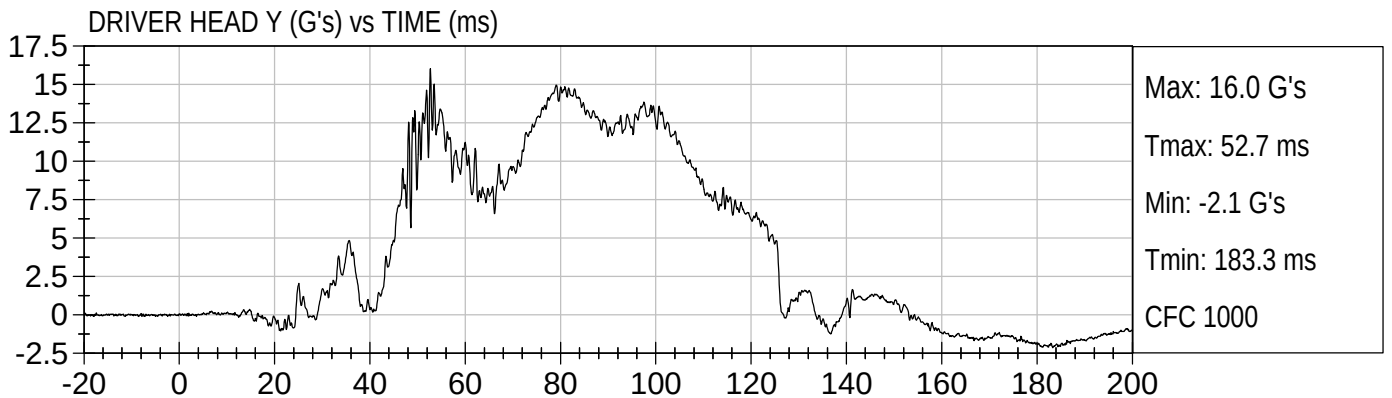
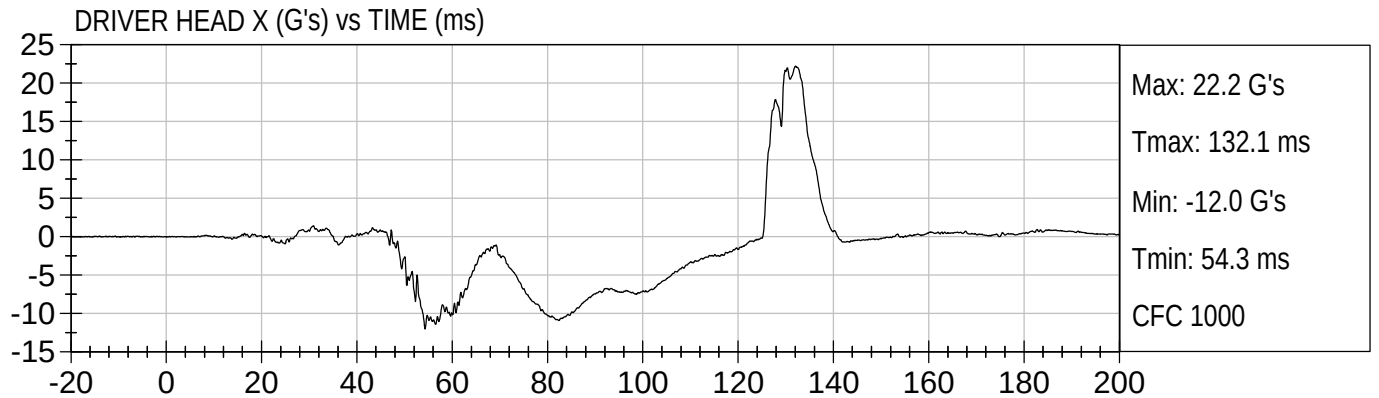
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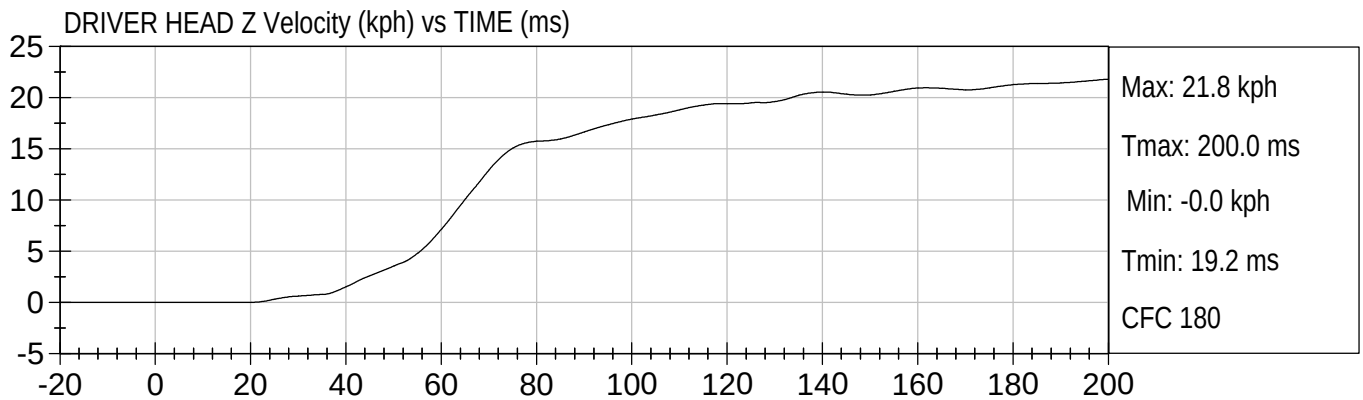
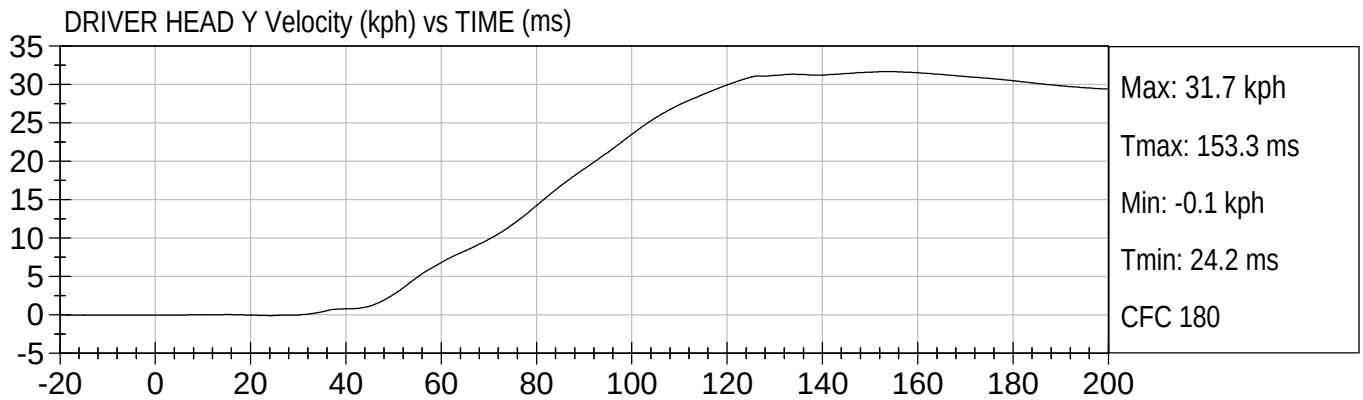
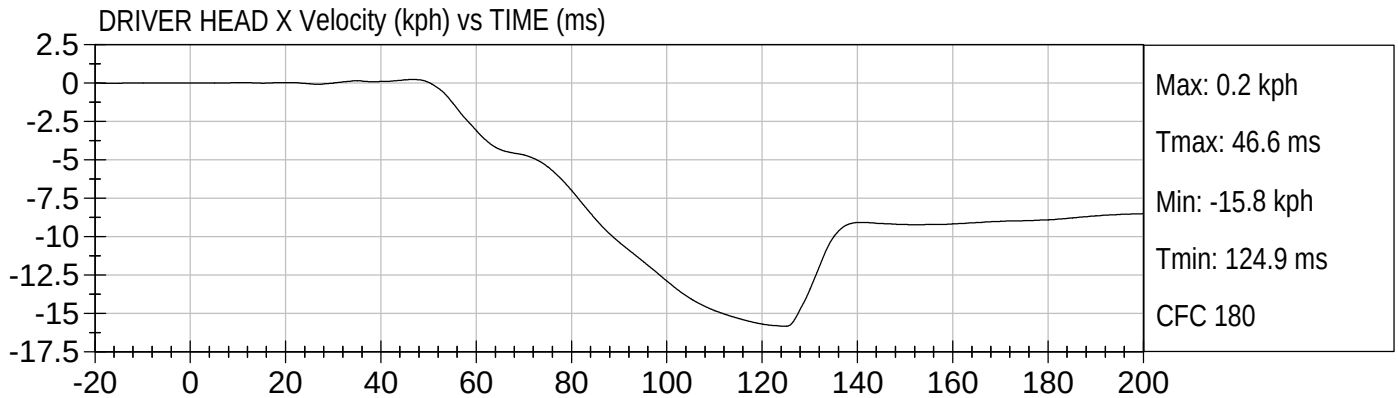
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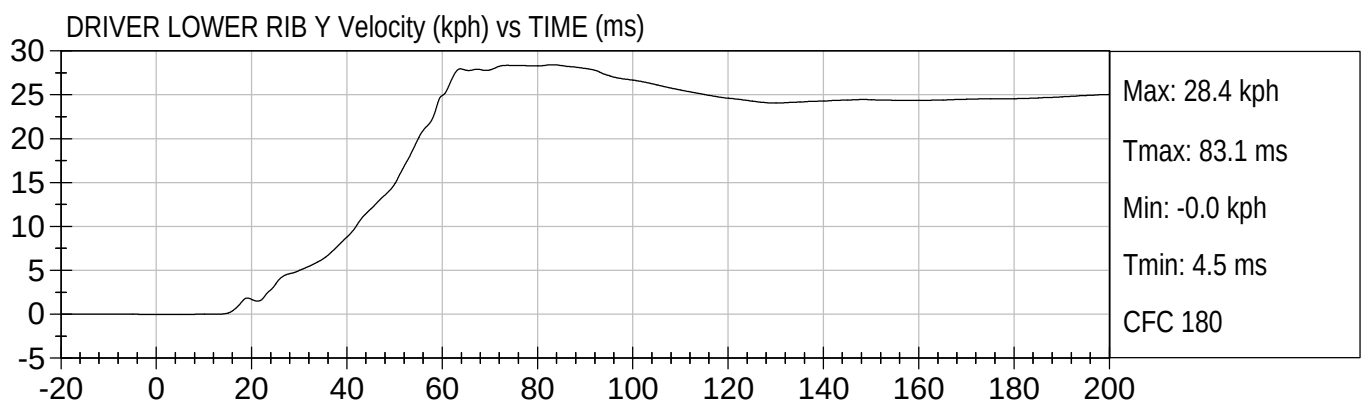
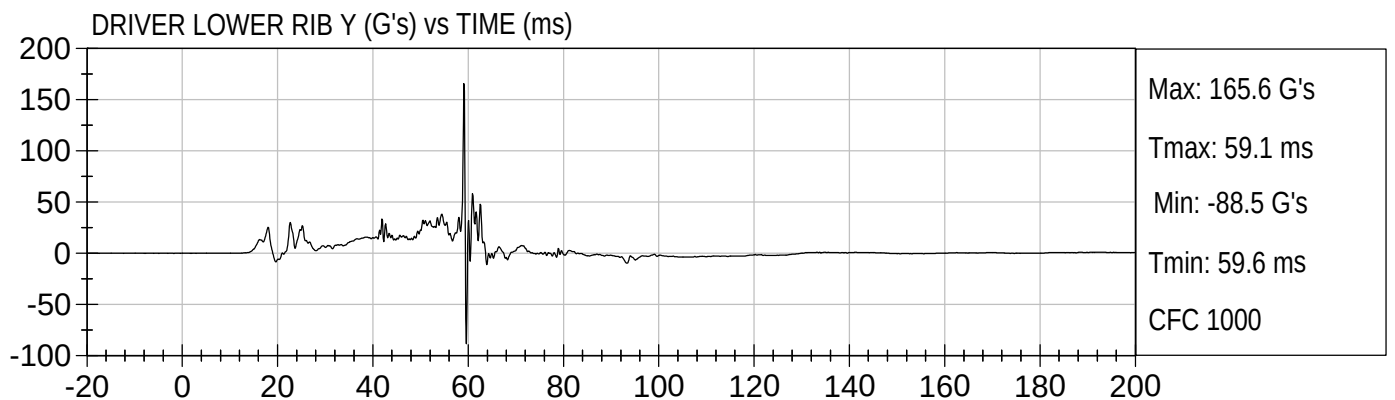
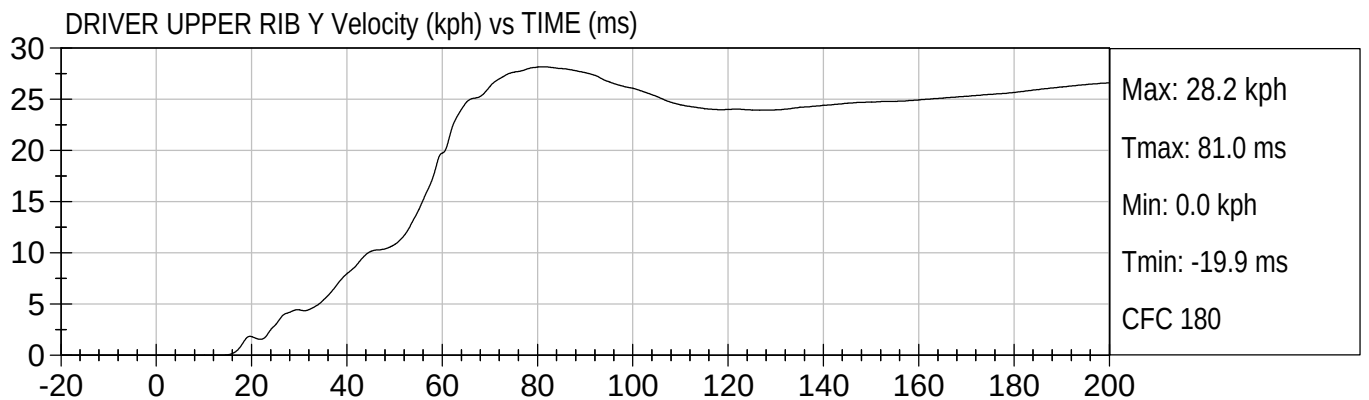
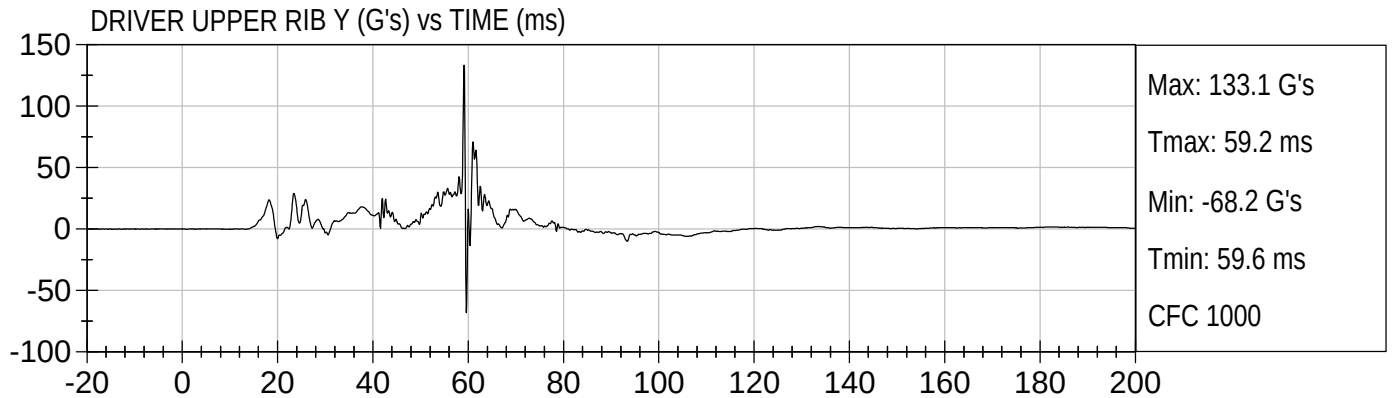


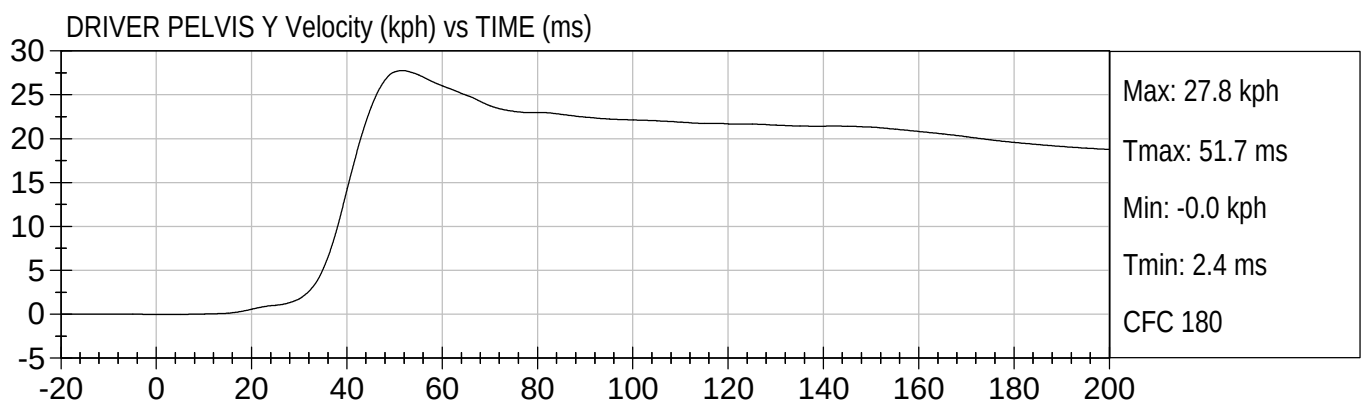
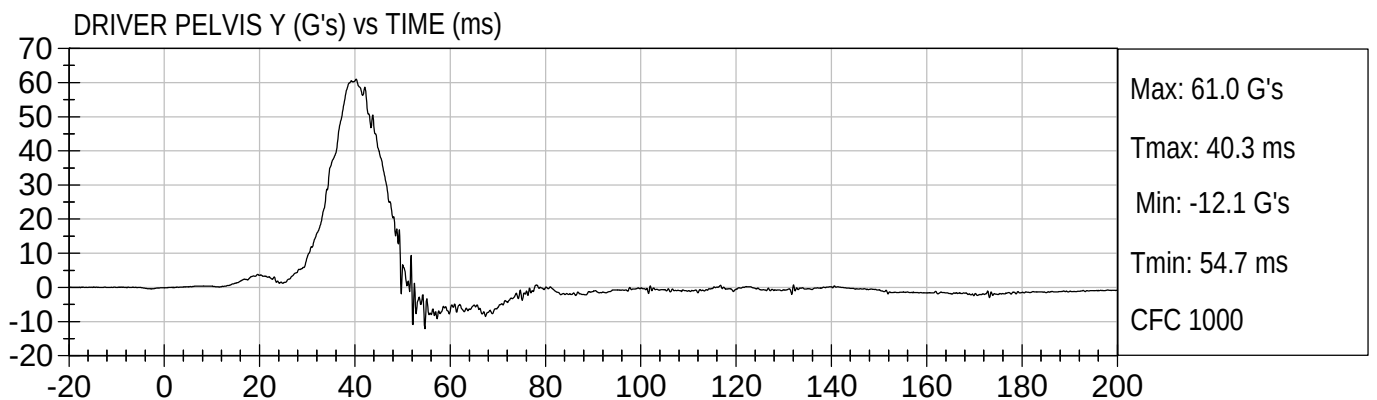
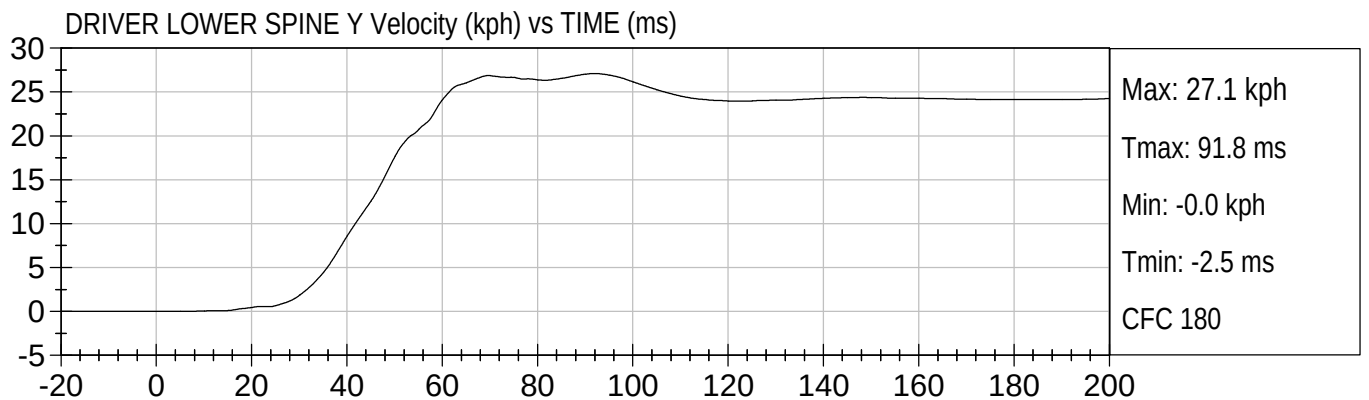
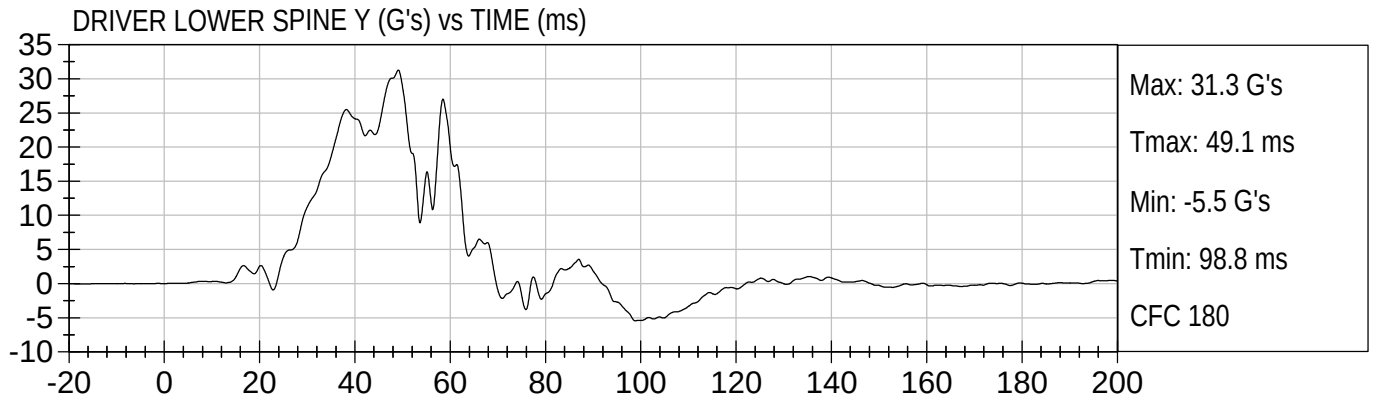
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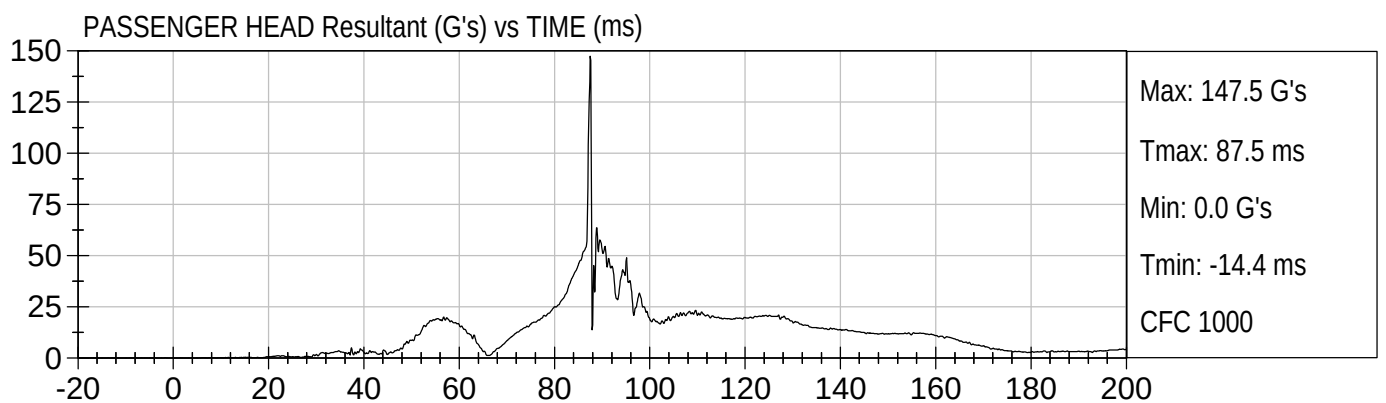
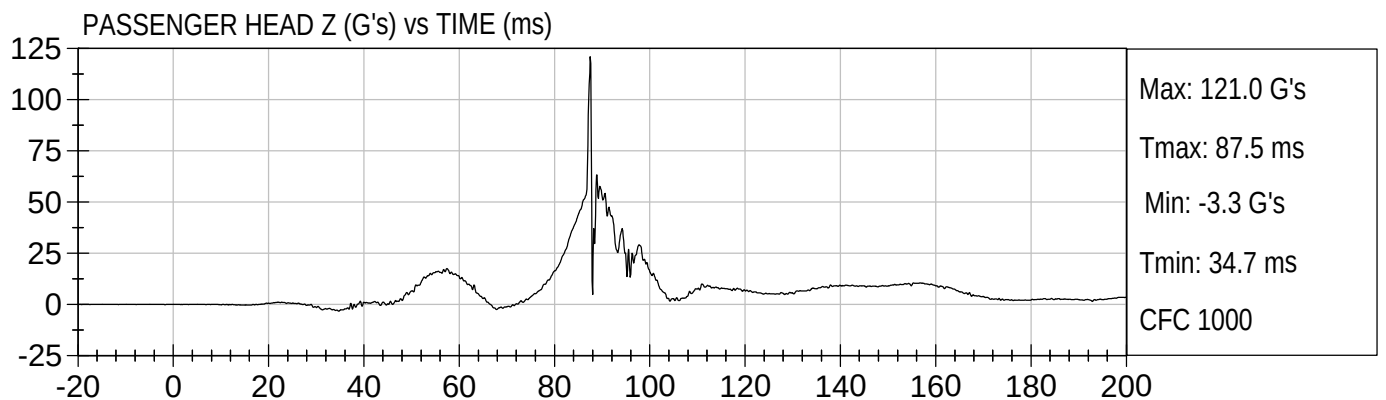
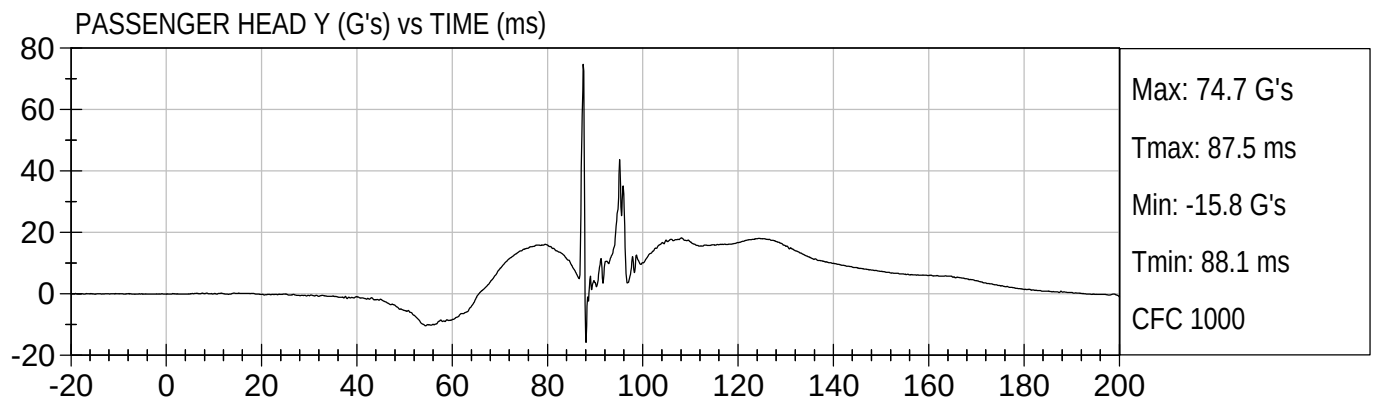
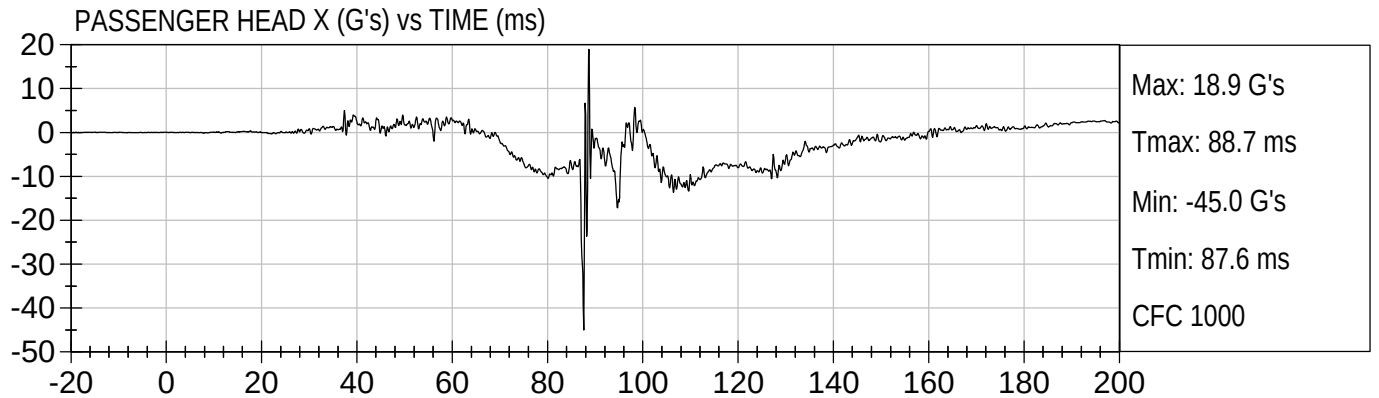
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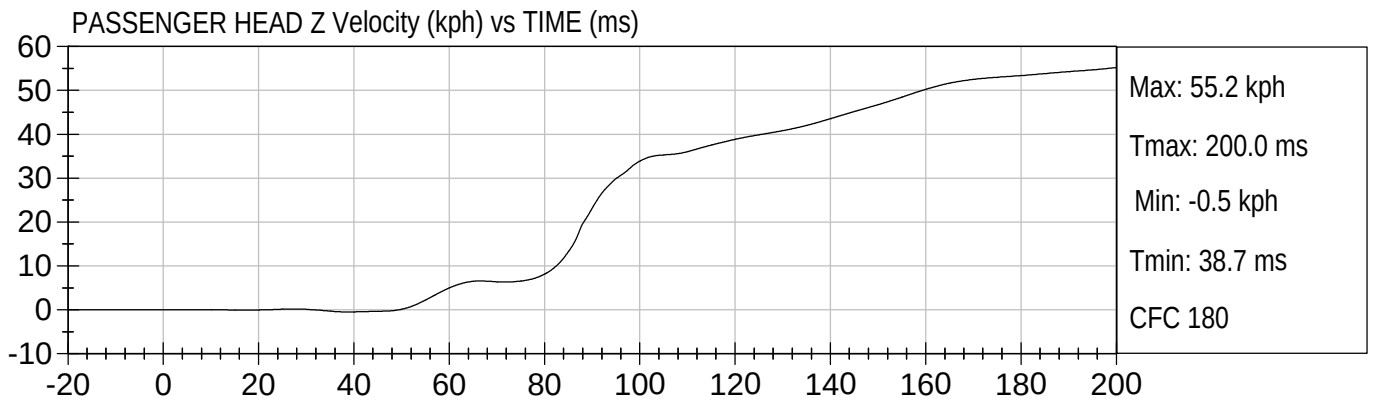
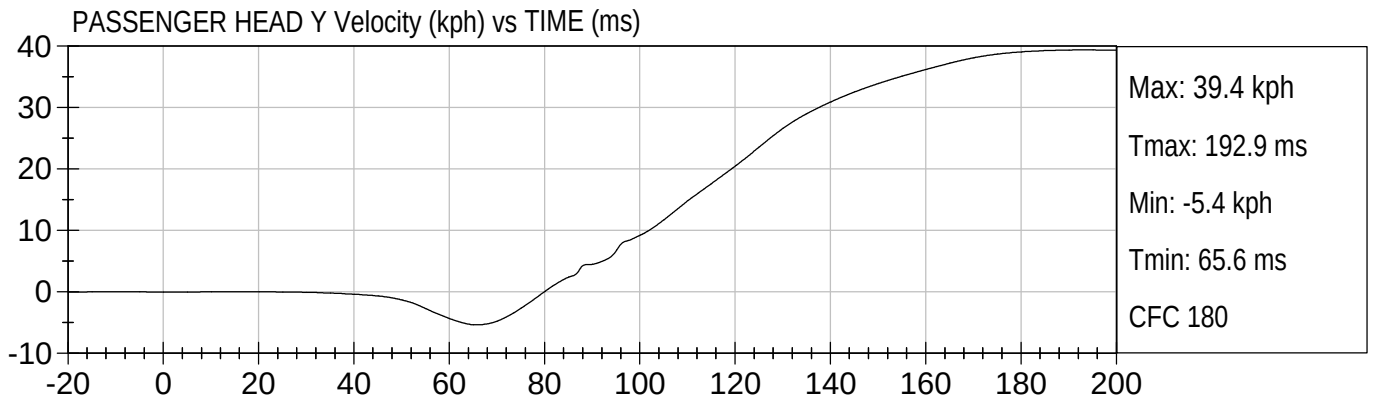
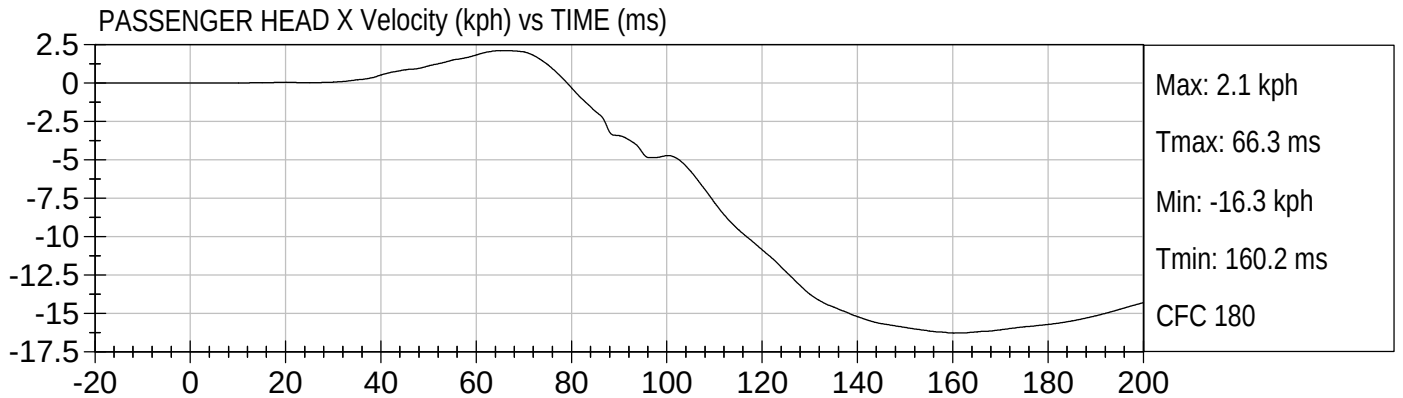


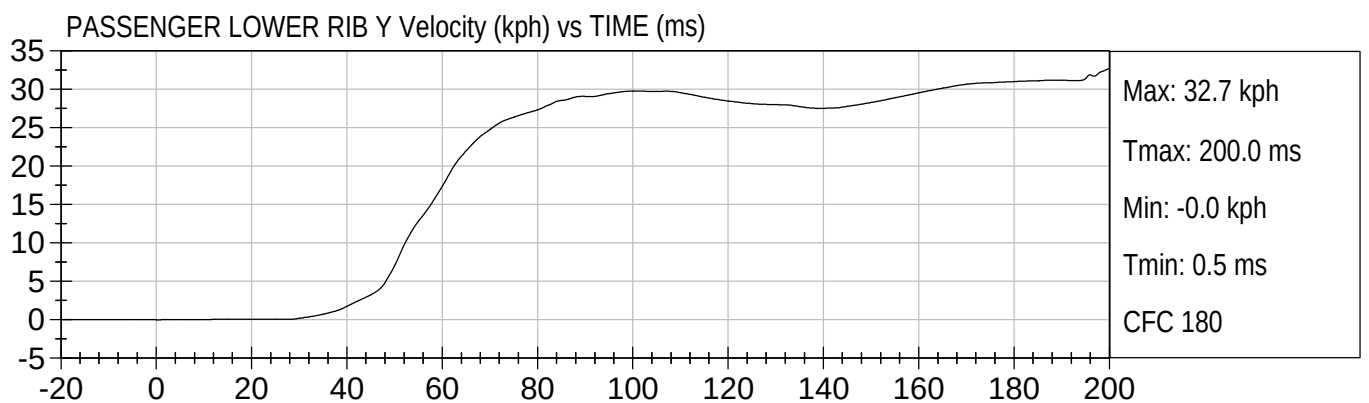
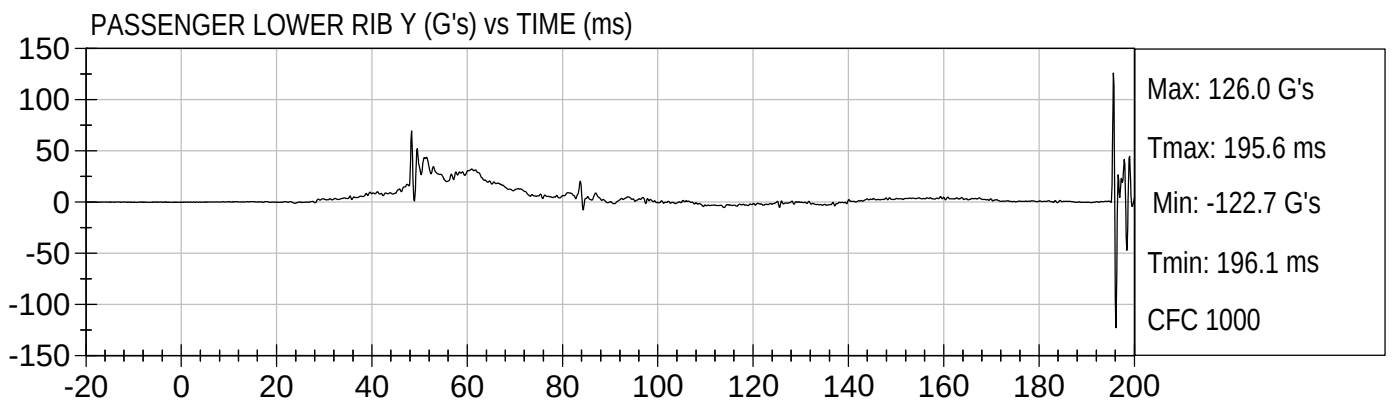
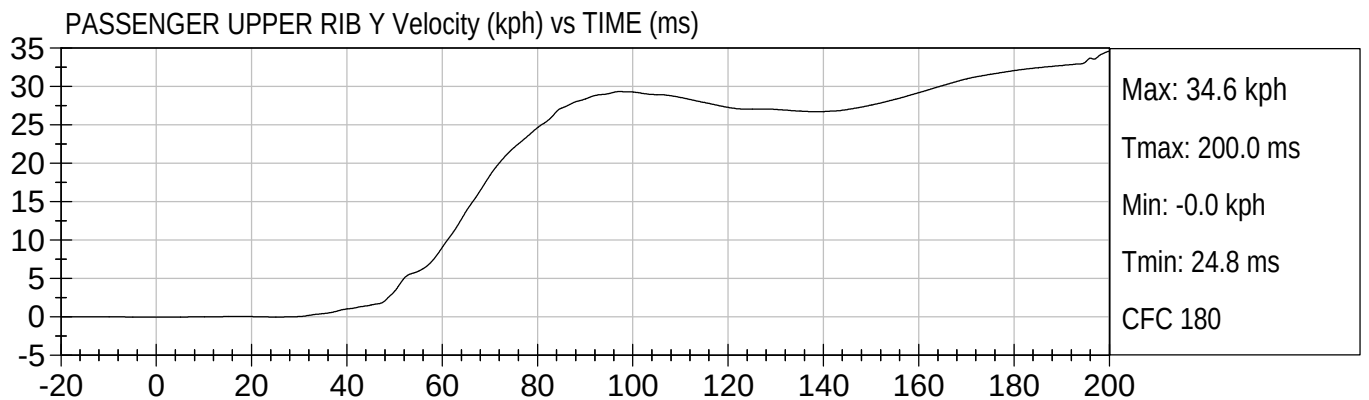
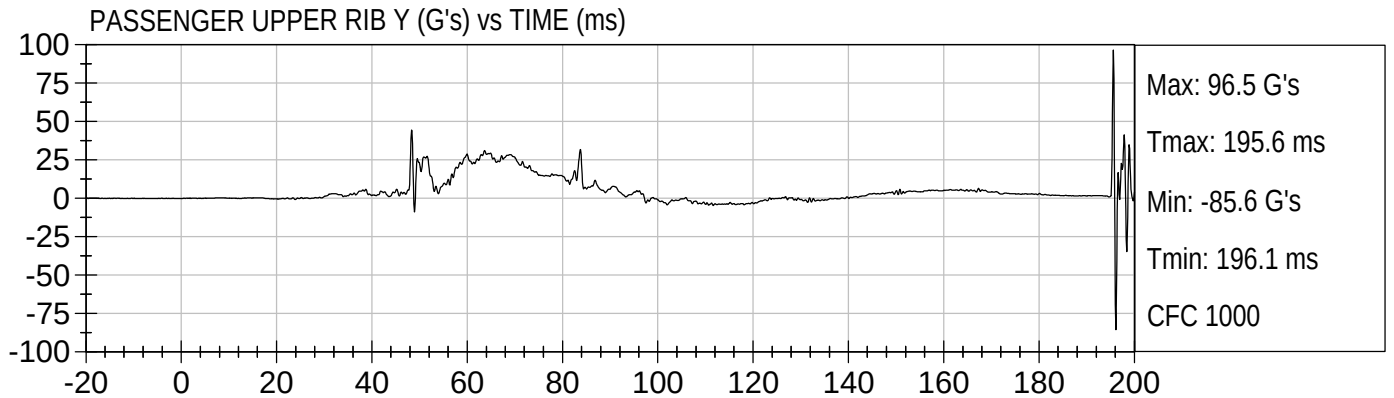


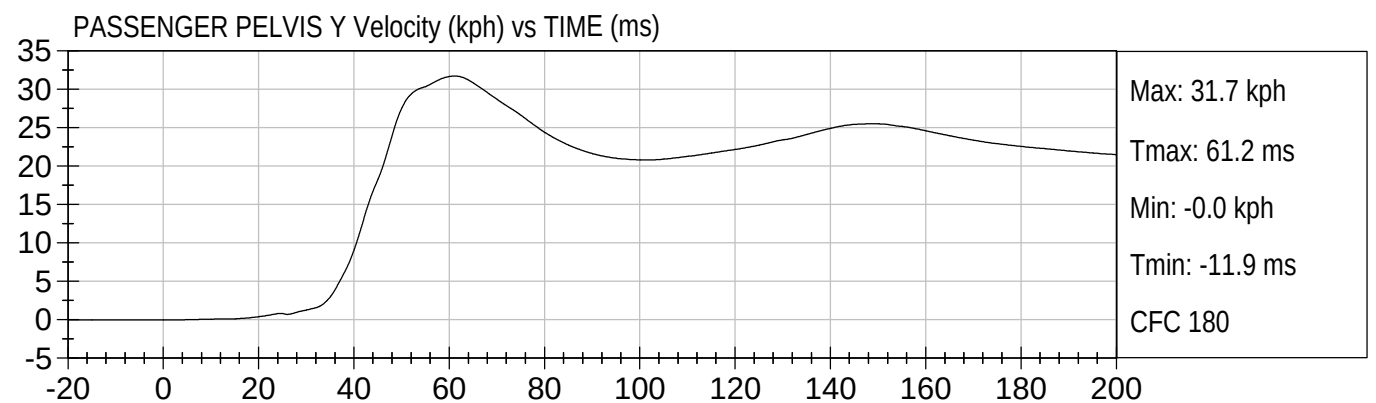
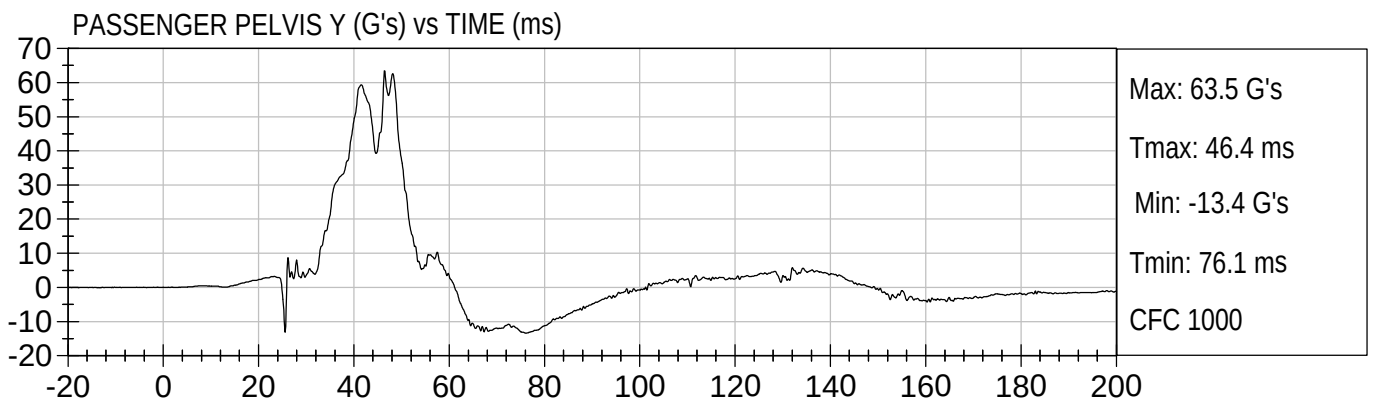
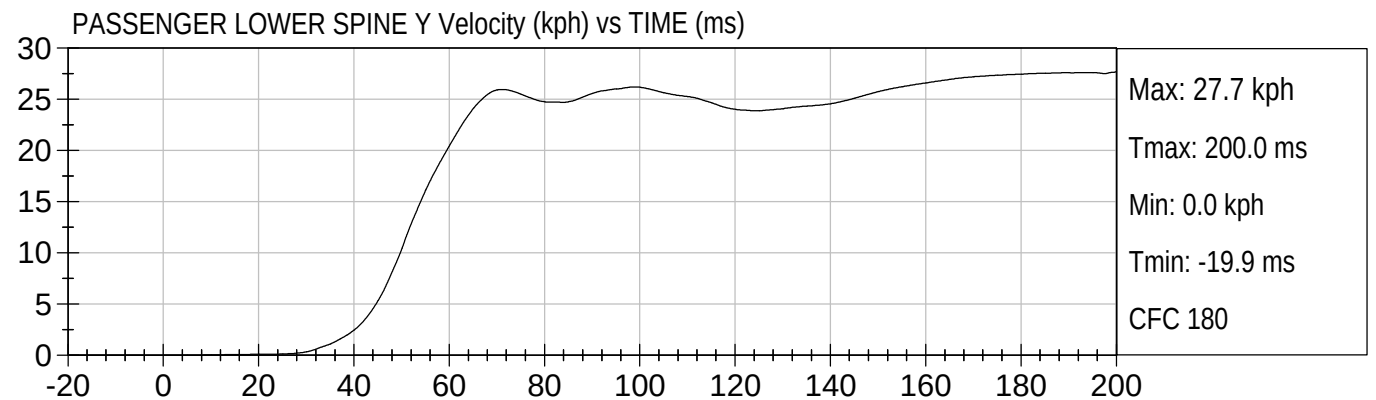
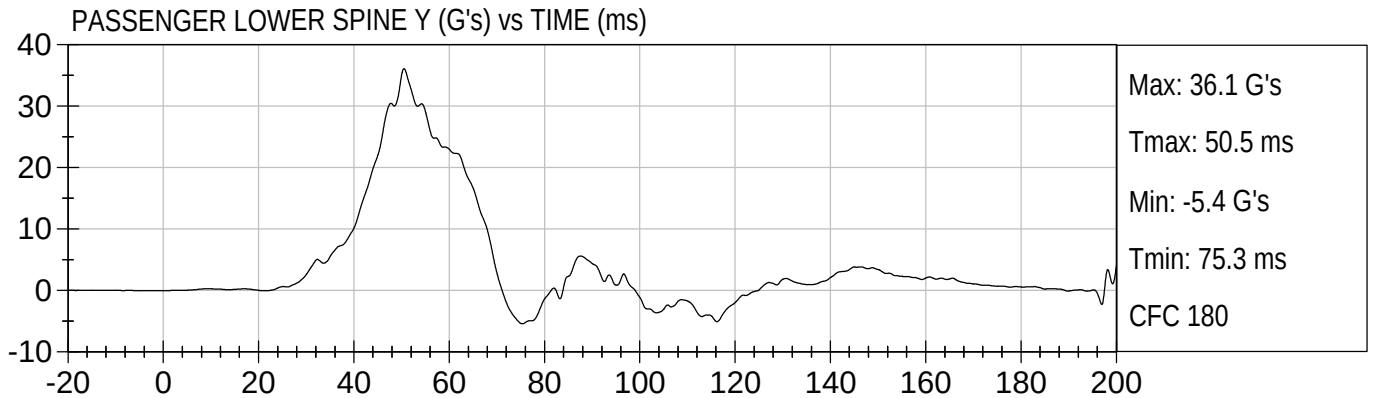


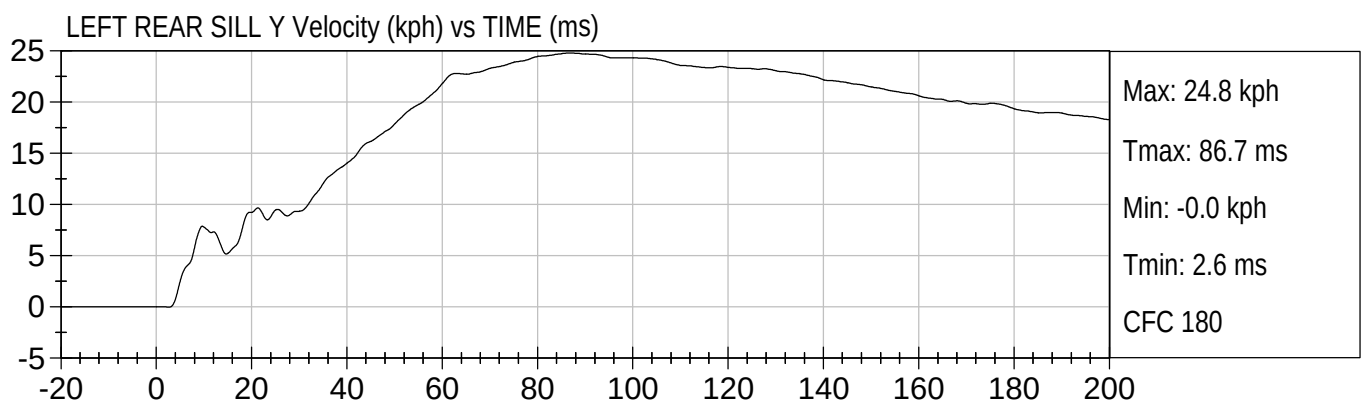
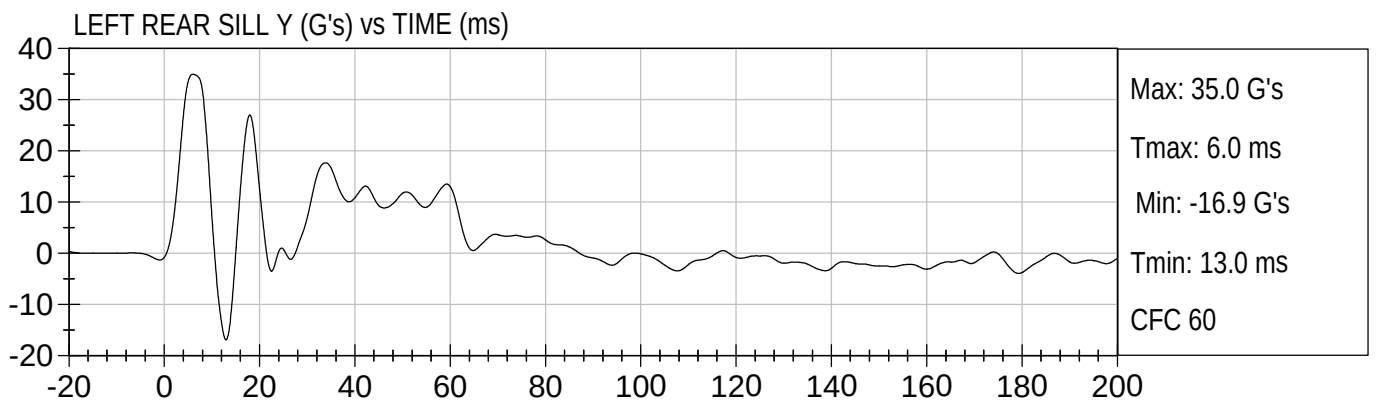
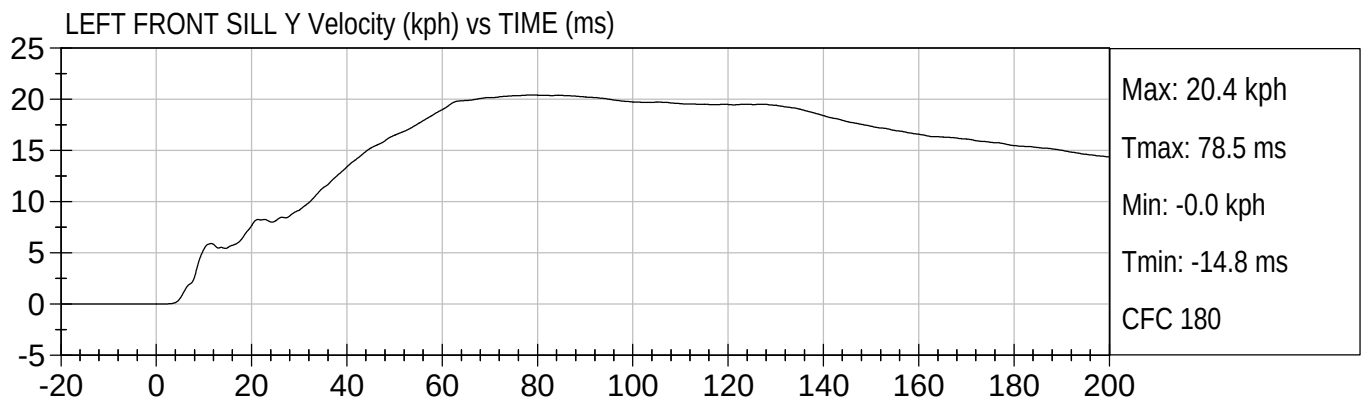
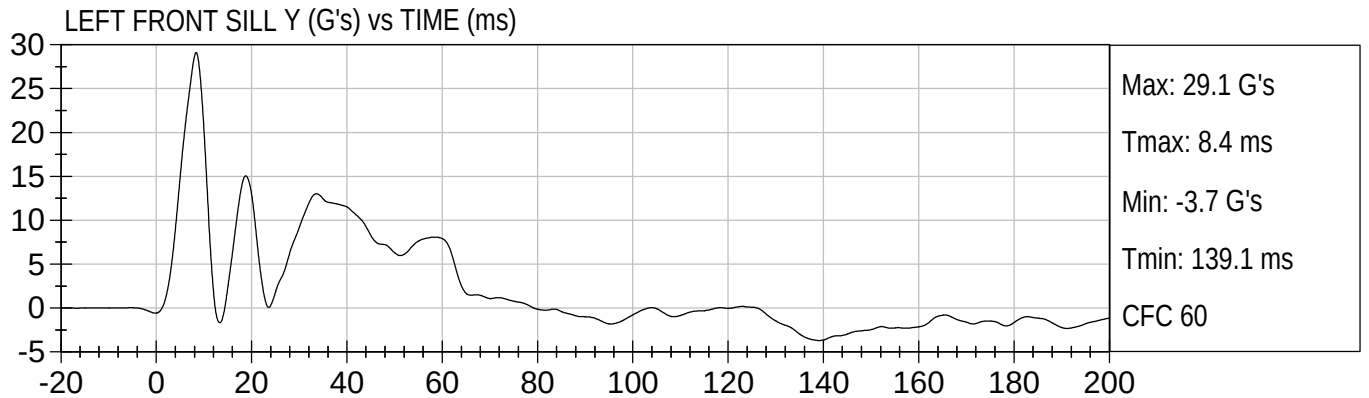






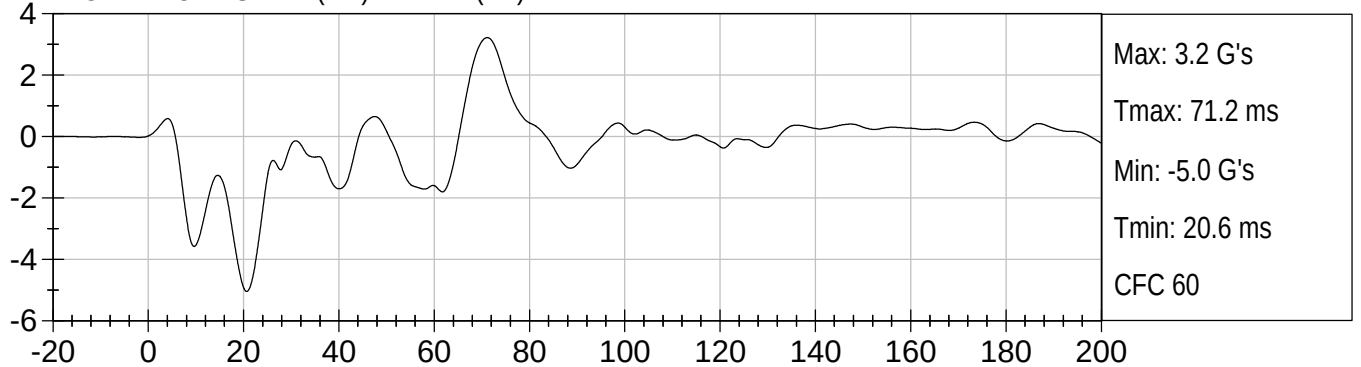




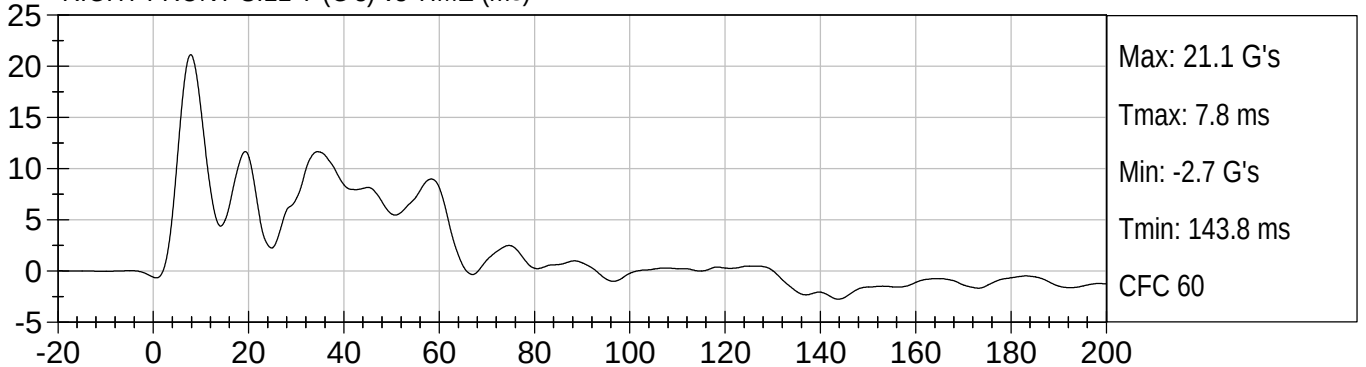




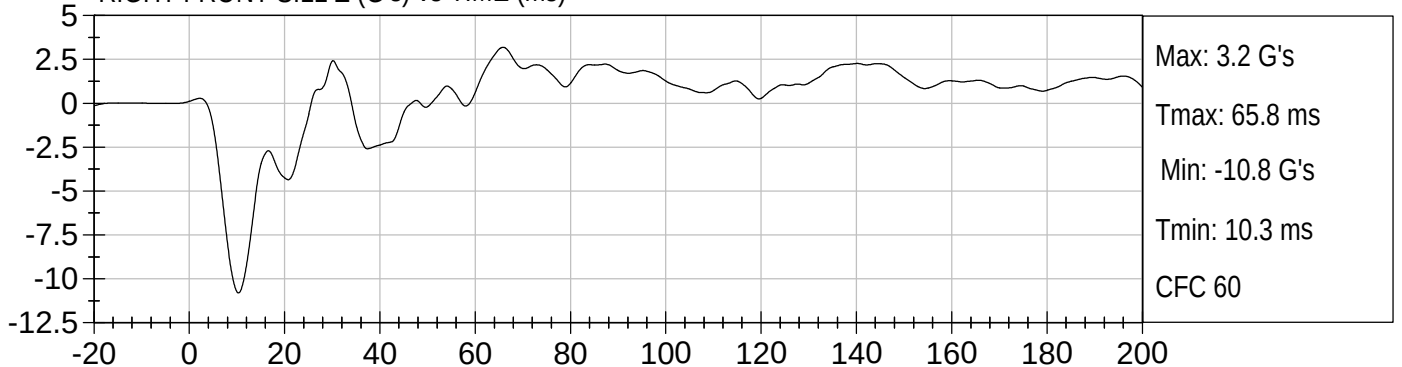
RIGHT FRONT SILL X (G's) vs TIME (ms)



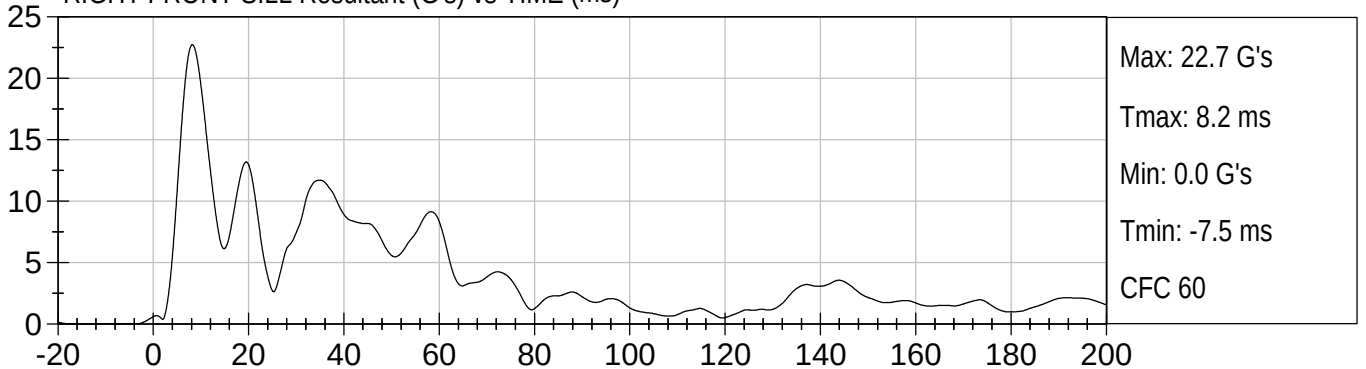
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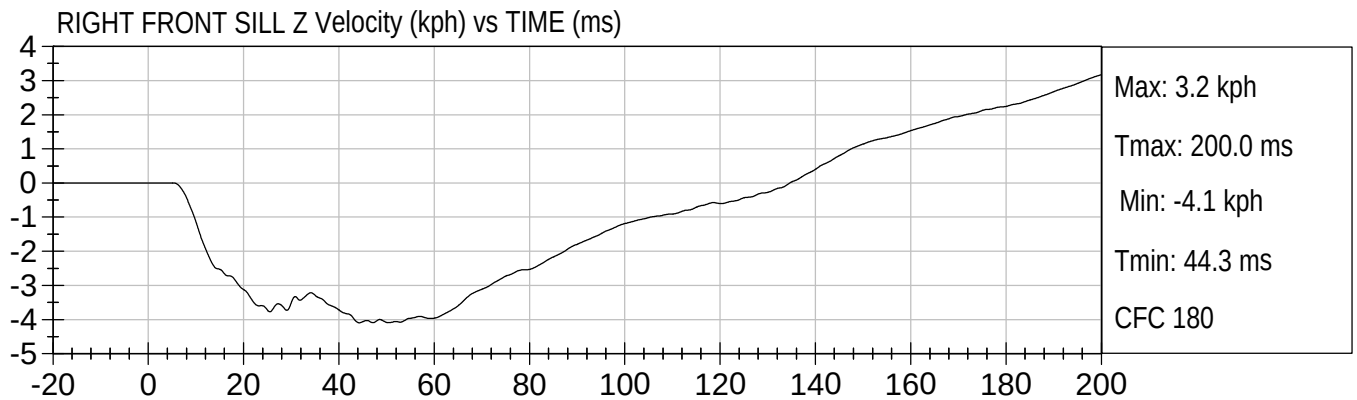
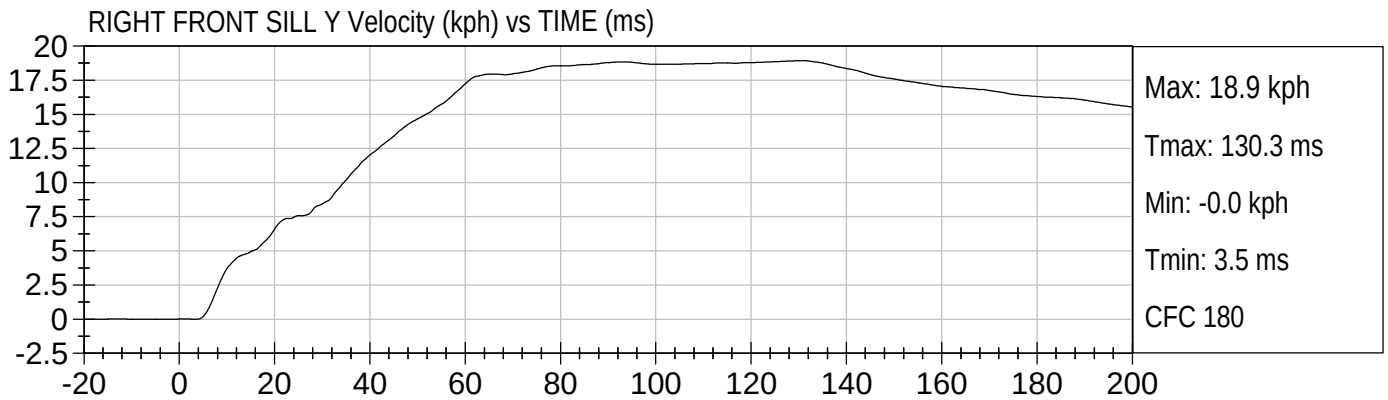
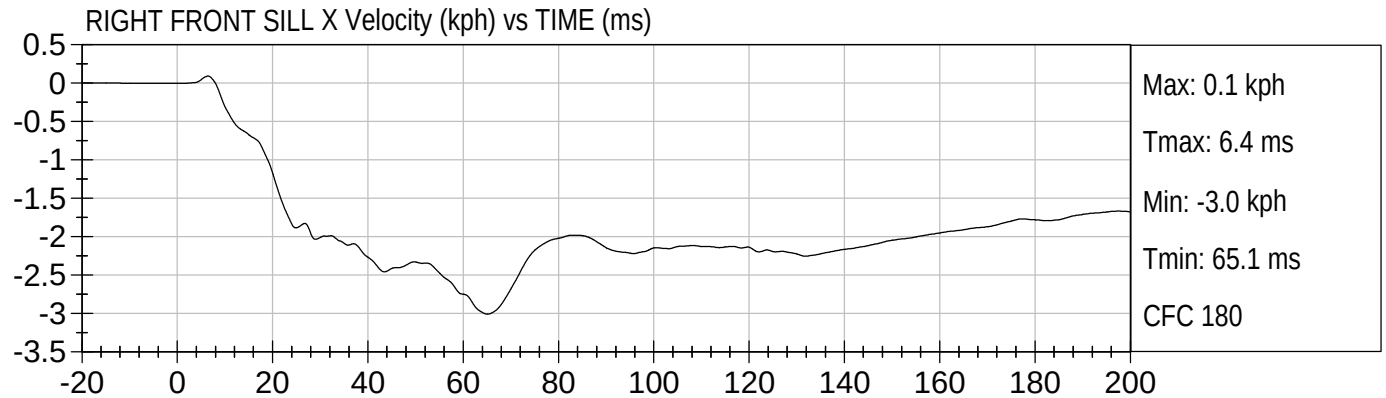


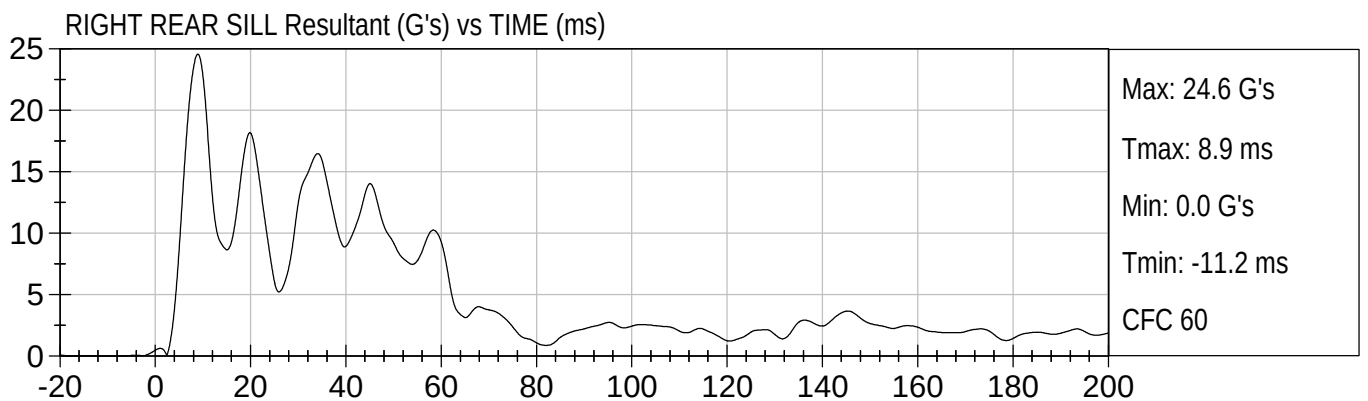
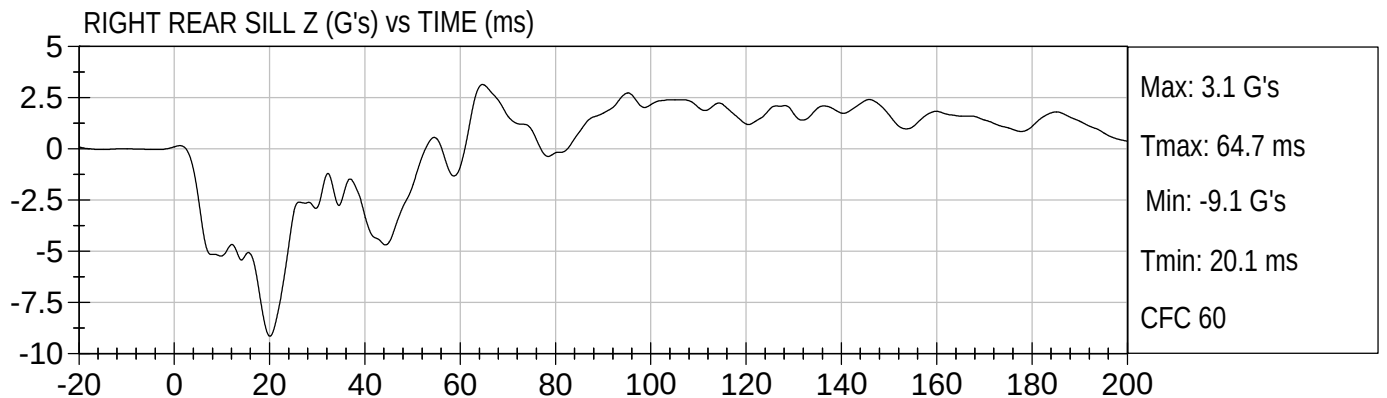
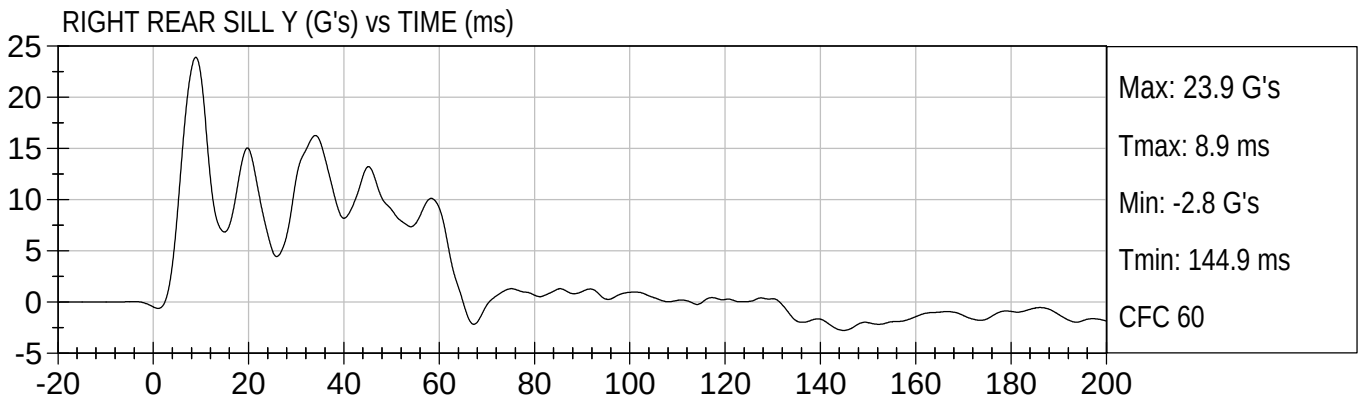
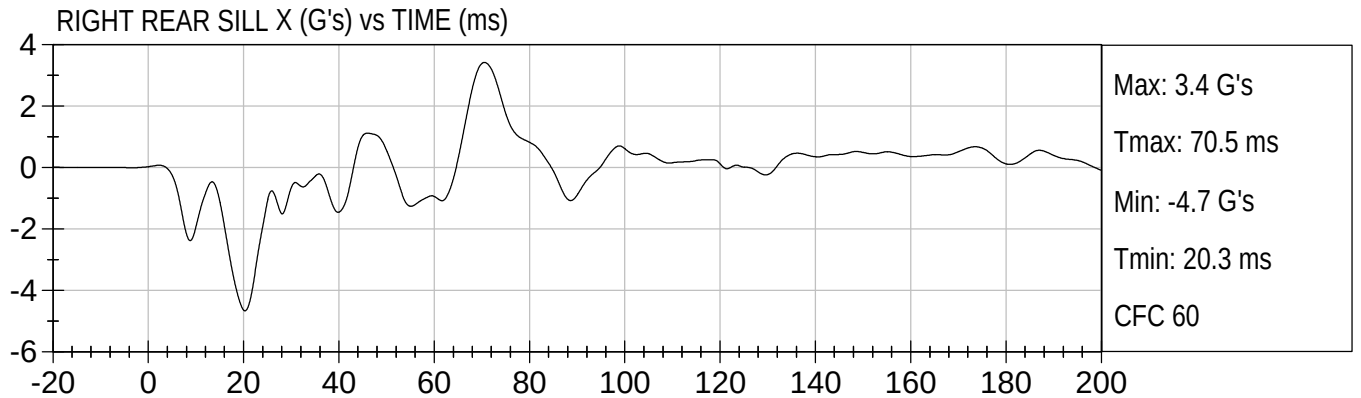
RIGHT FRONT SILL Z (G's) vs TIME (ms)

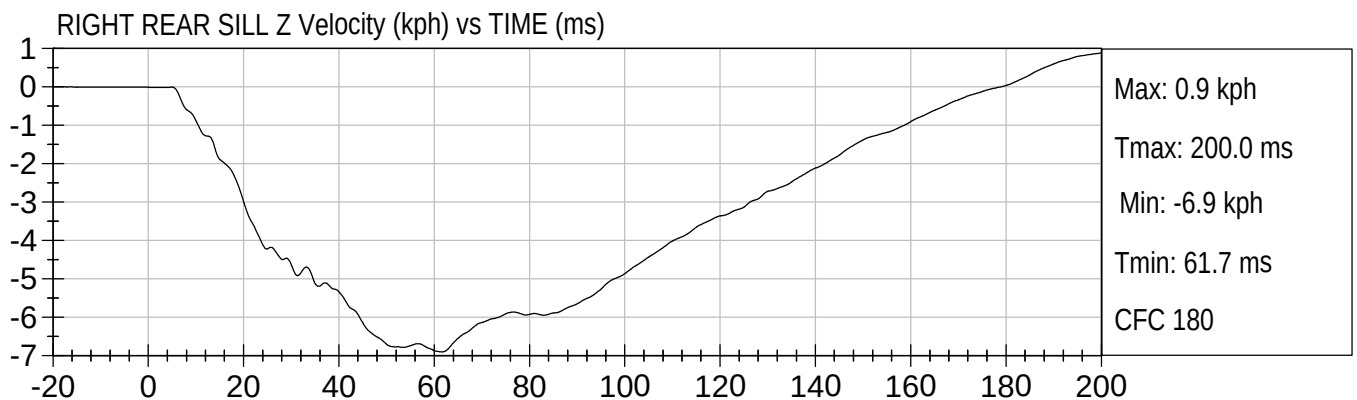
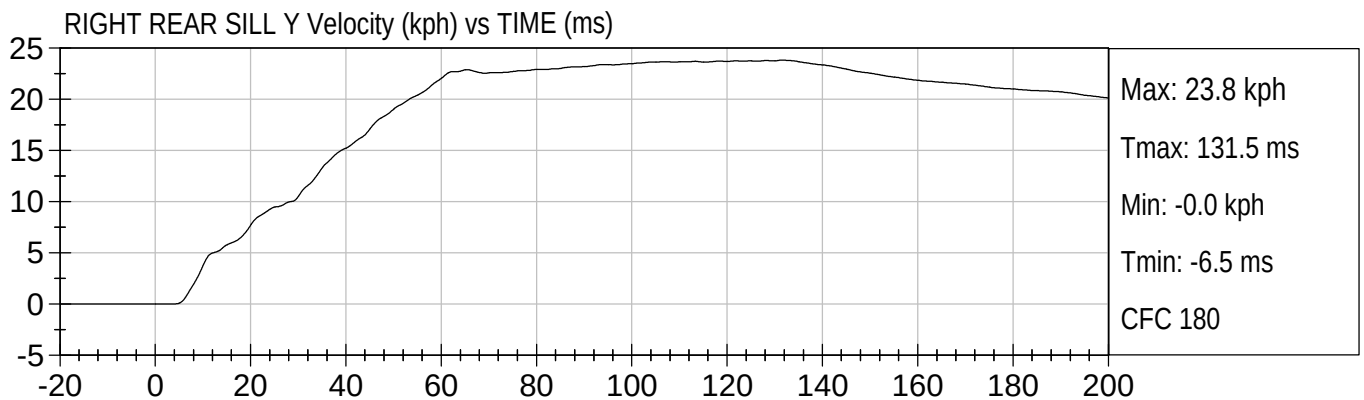
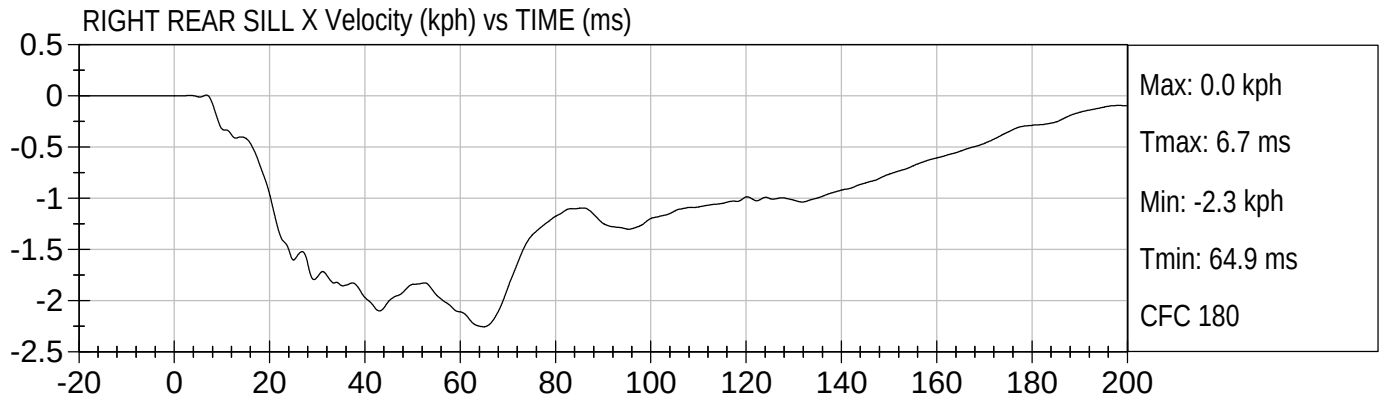


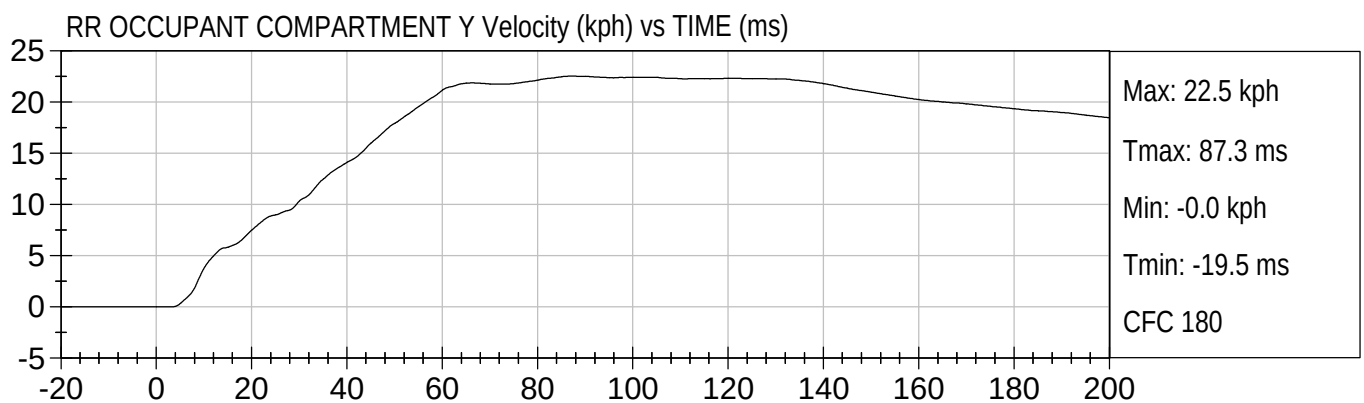
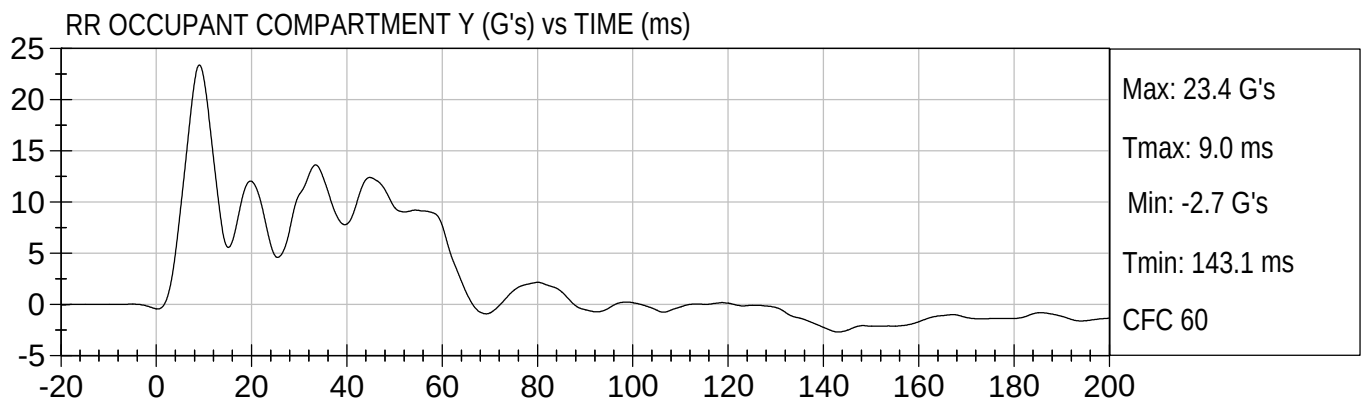
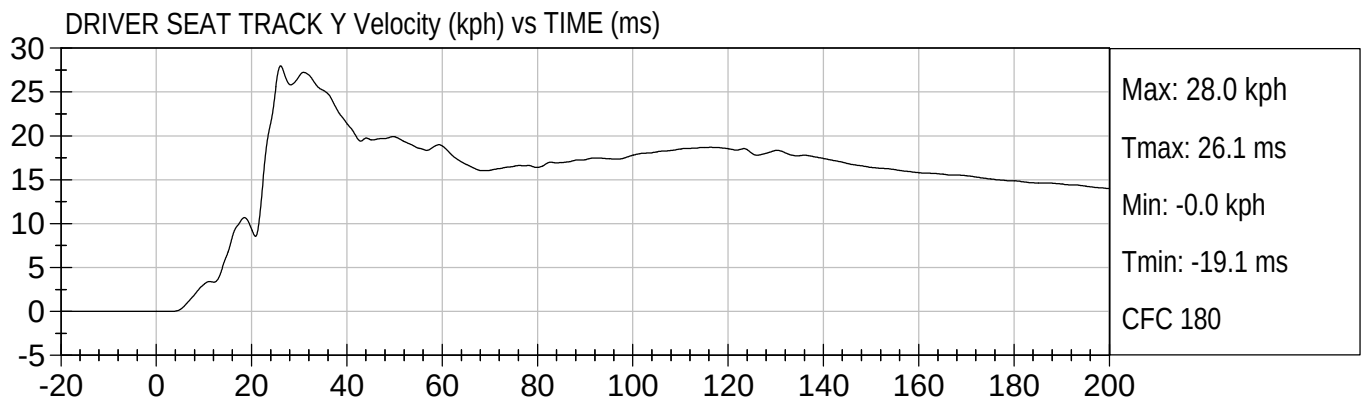
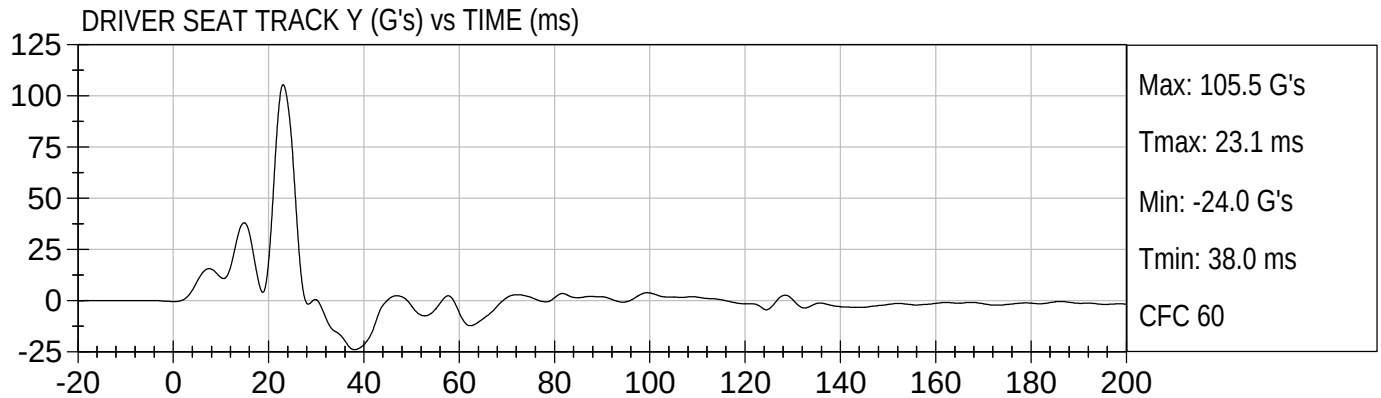
RIGHT FRONT SILL Resultant (G's) vs TIME (ms)

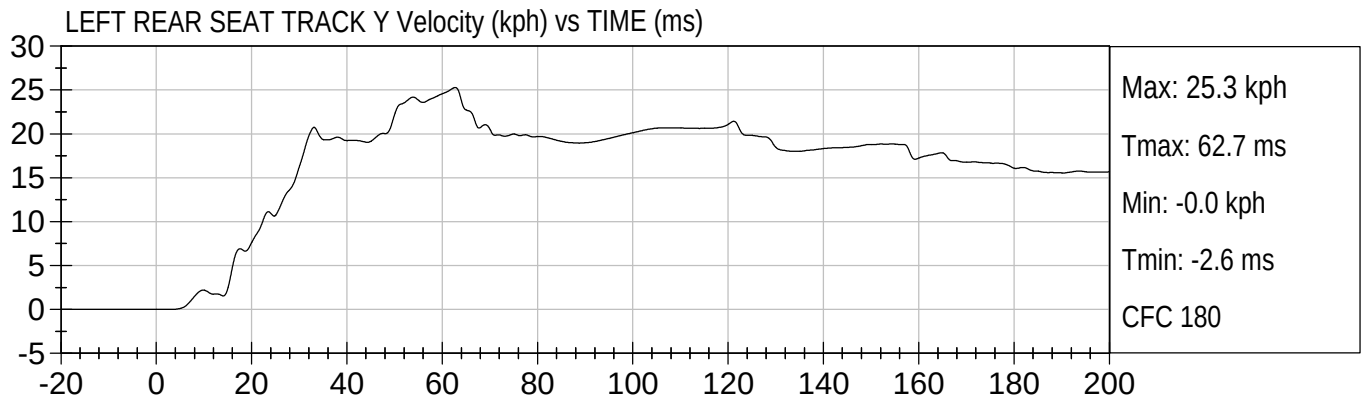
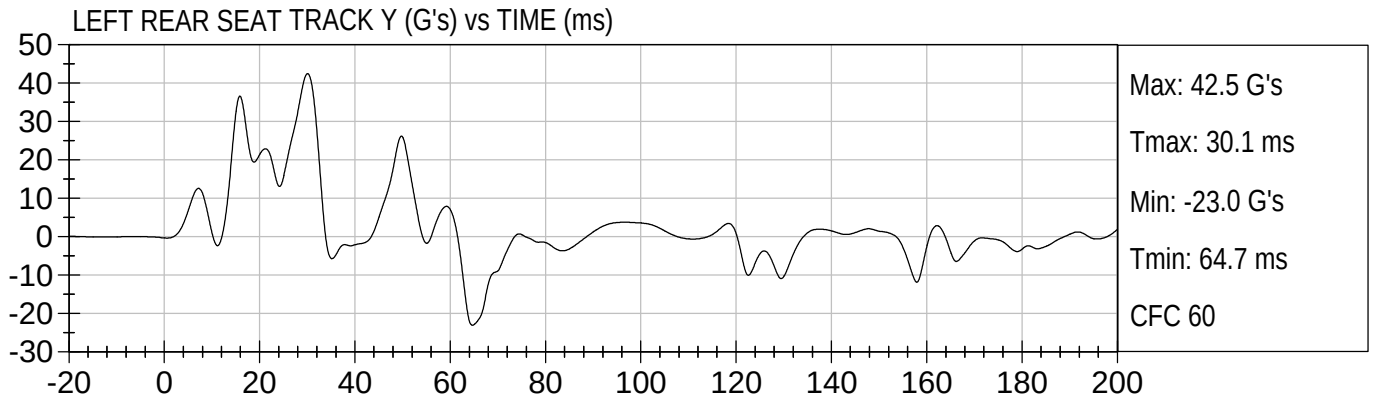


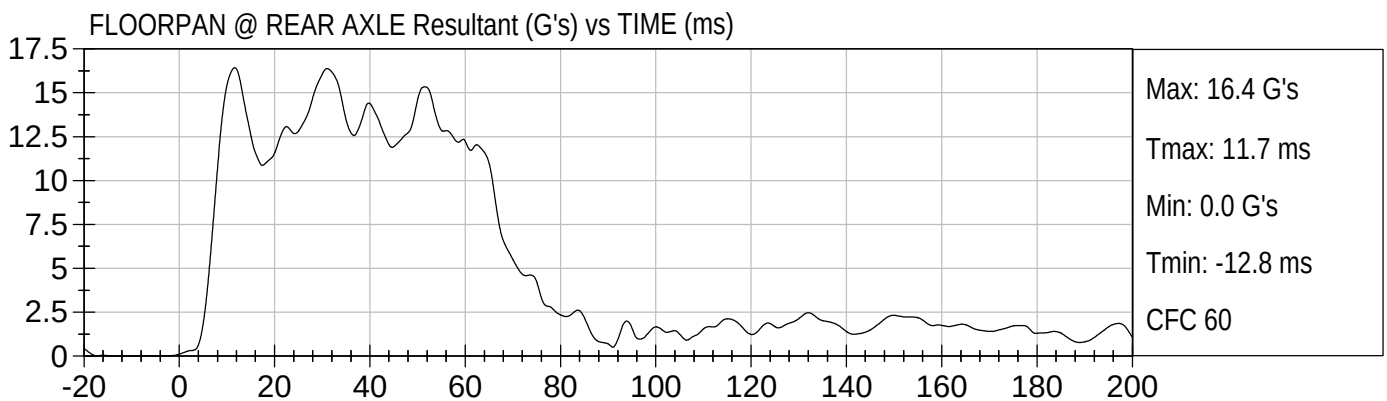
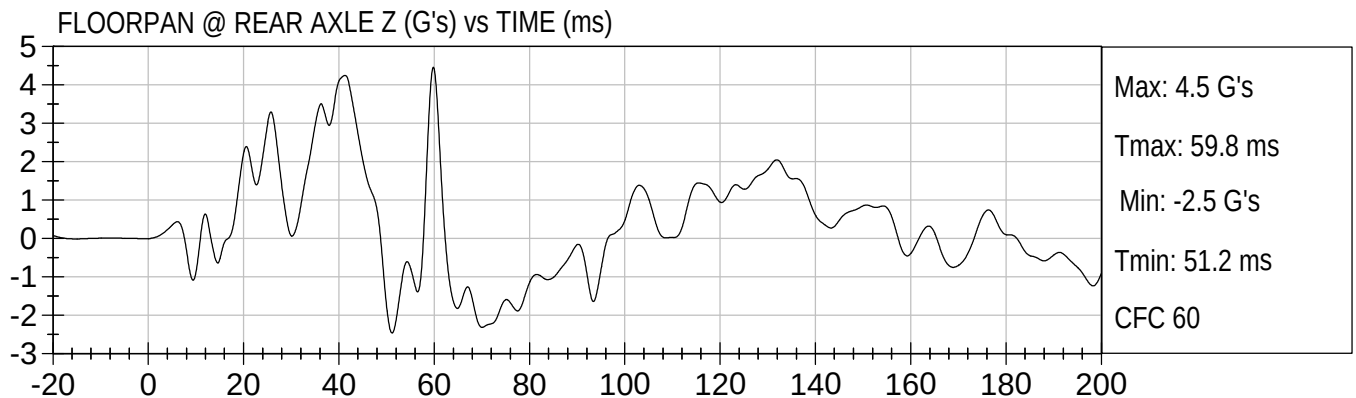
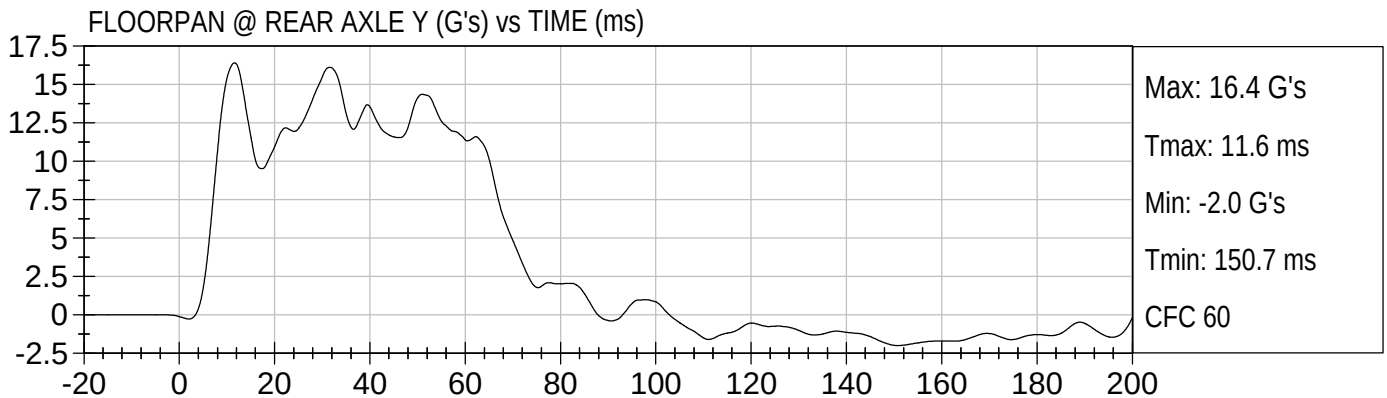
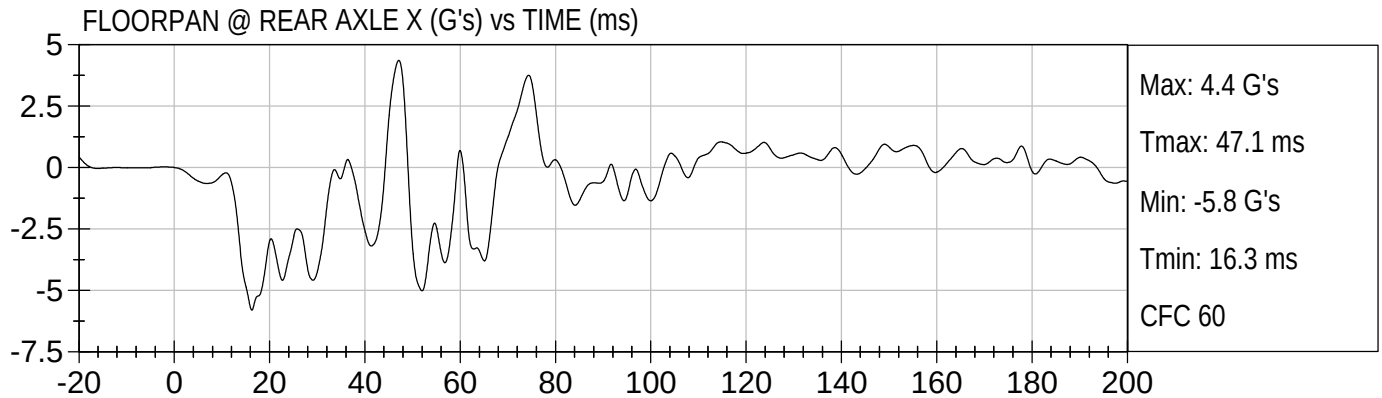






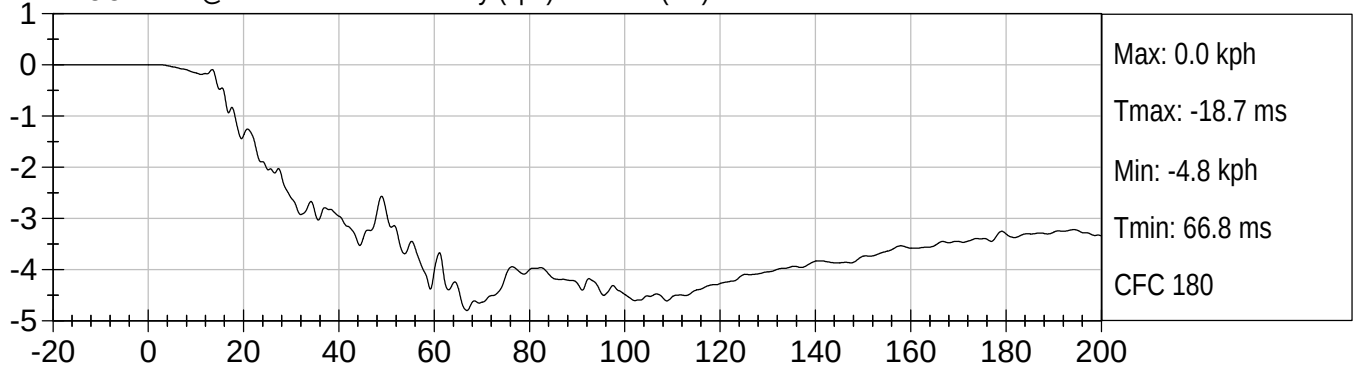




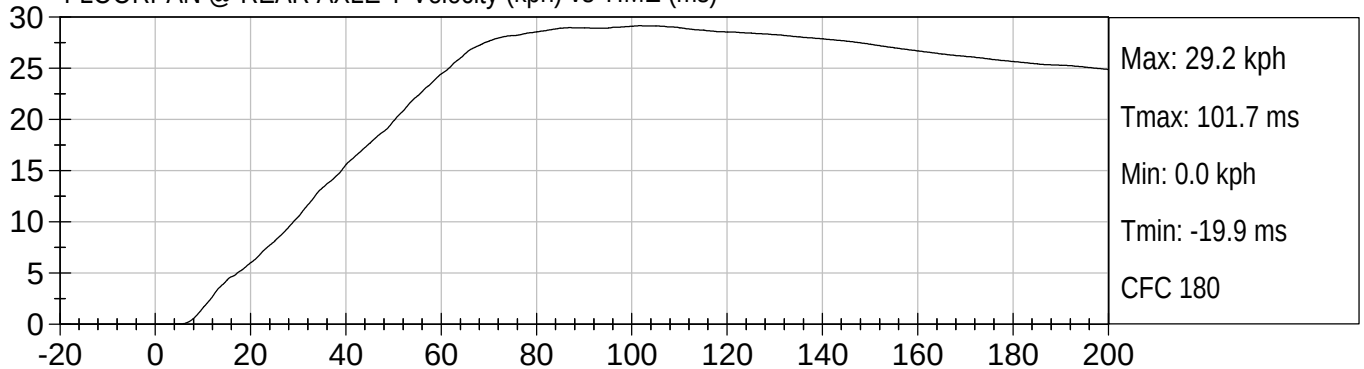




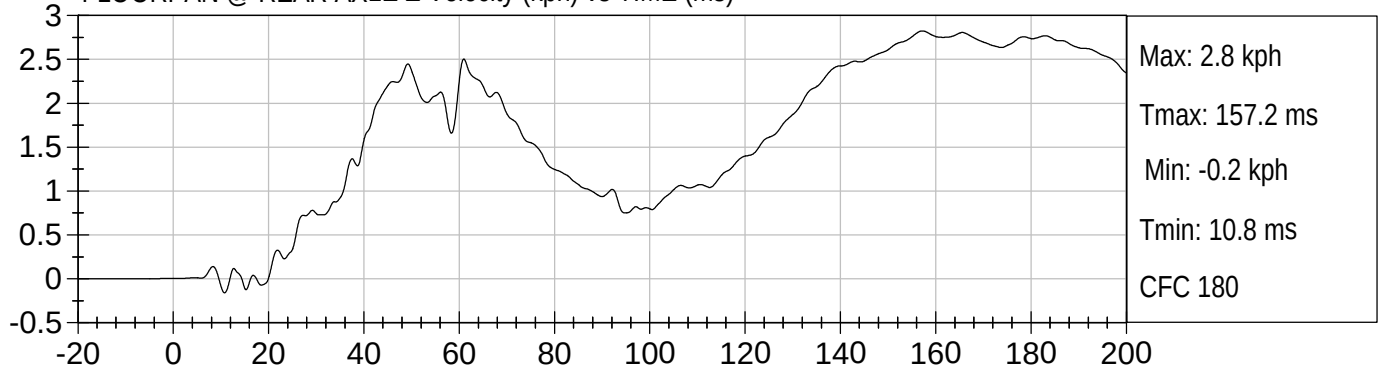
FLOORPAN @ REAR AXLE X Velocity (kph) vs TIME (ms)



FLOORPAN @ REAR AXLE Y Velocity (kph) vs TIME (ms)

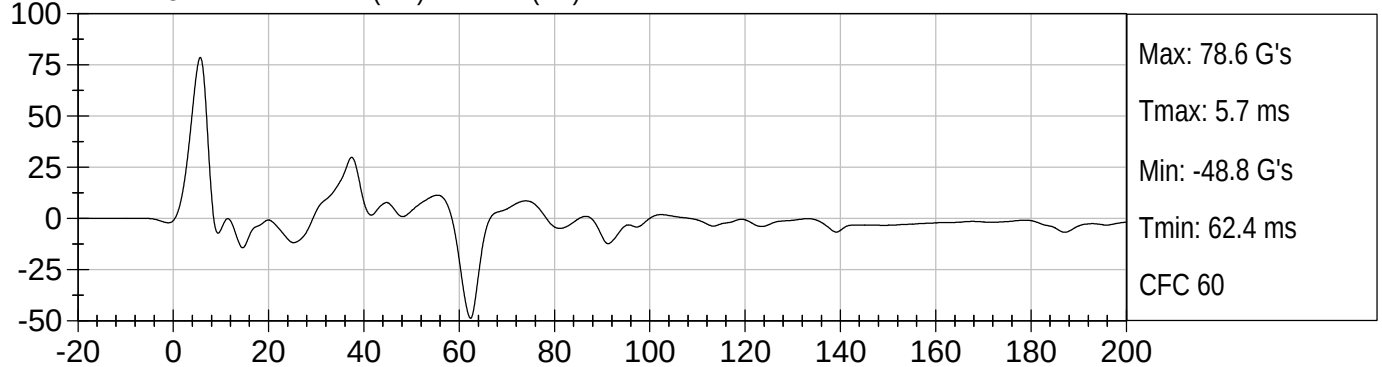


FLOORPAN @ REAR AXLE Z Velocity (kph) vs TIME (ms)

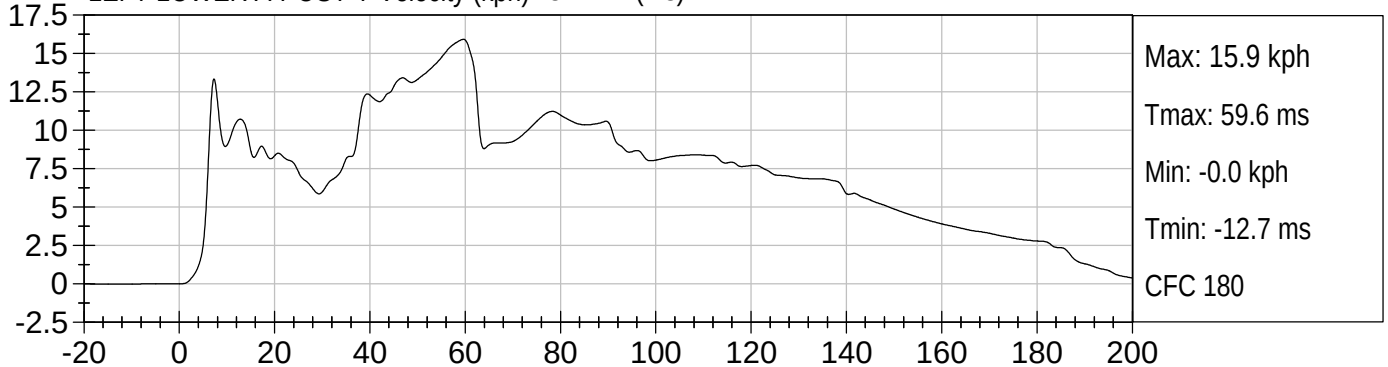




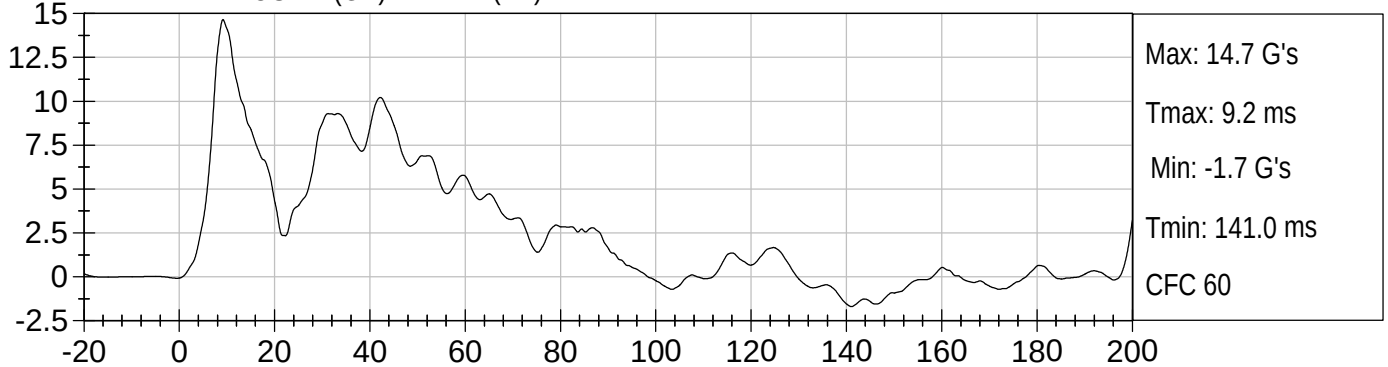
LEFT LOWER A-POST Y (G's) vs TIME (ms)



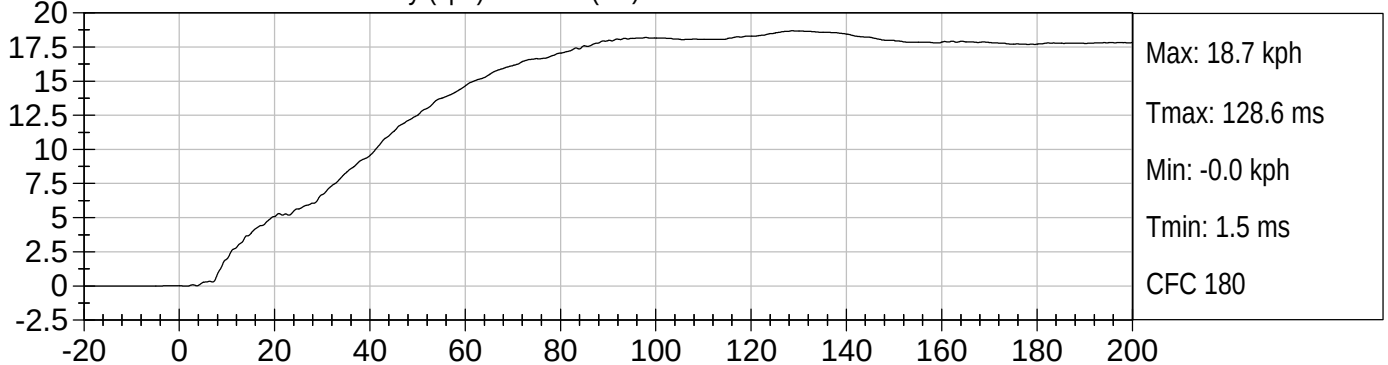
LEFT LOWER A-POST Y Velocity (kph) vs TIME (ms)

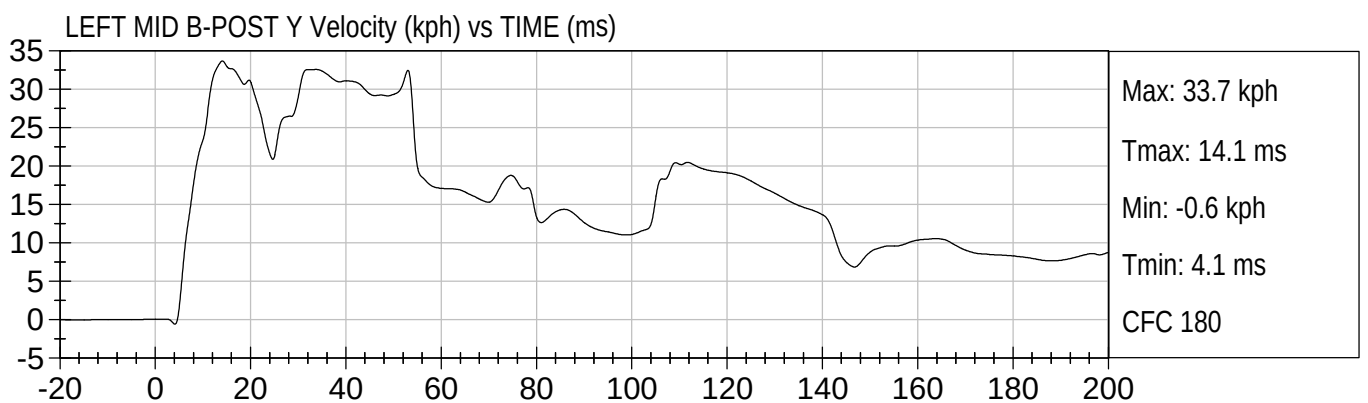
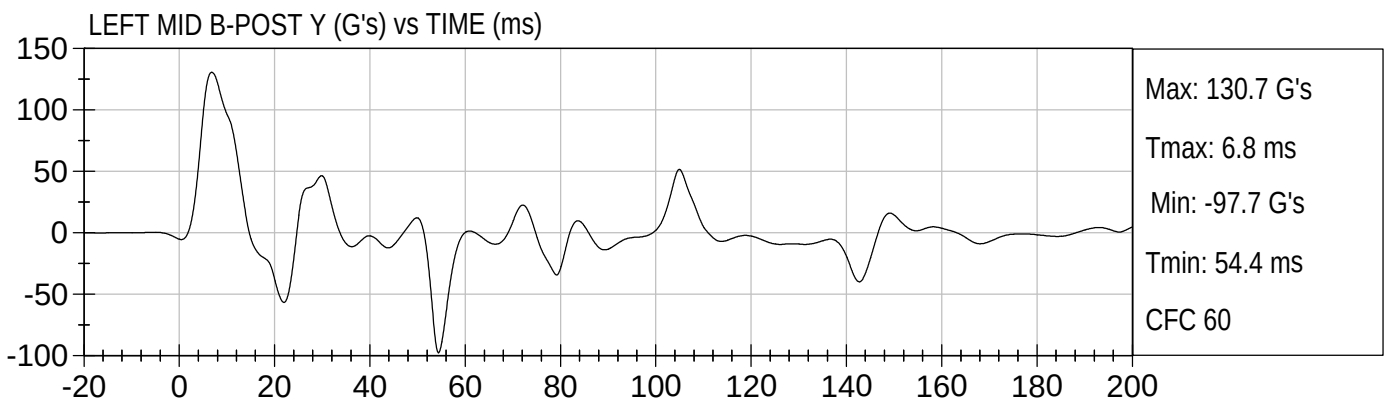
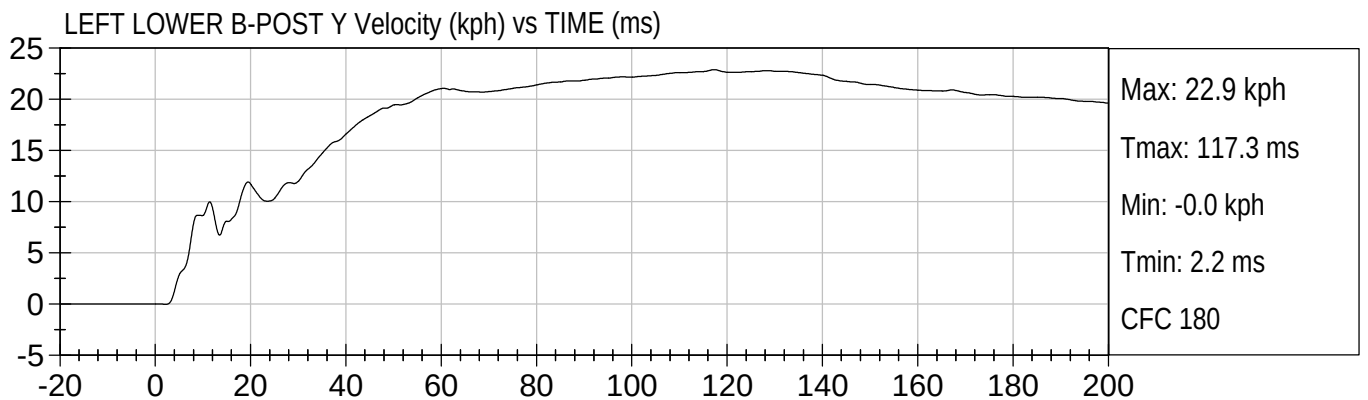
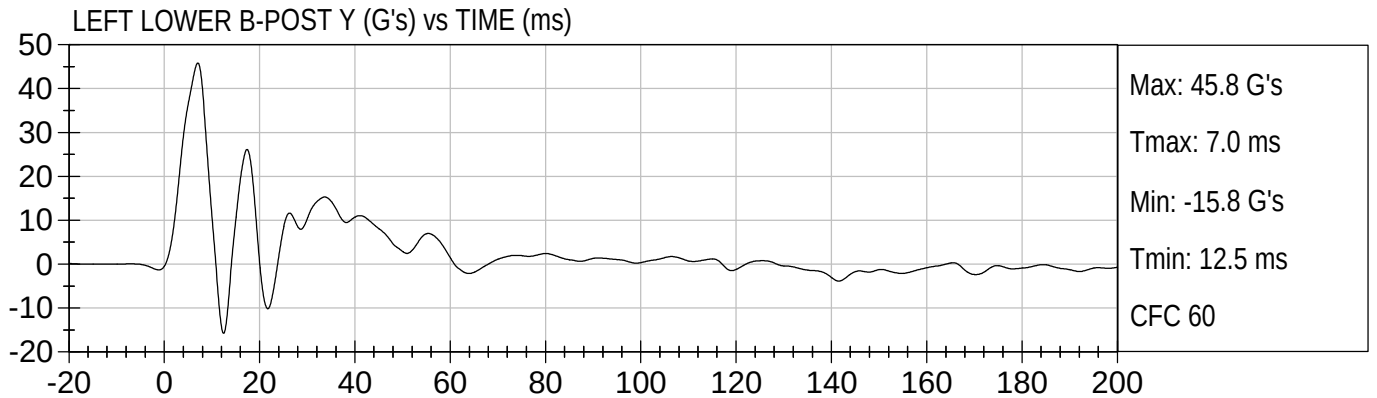


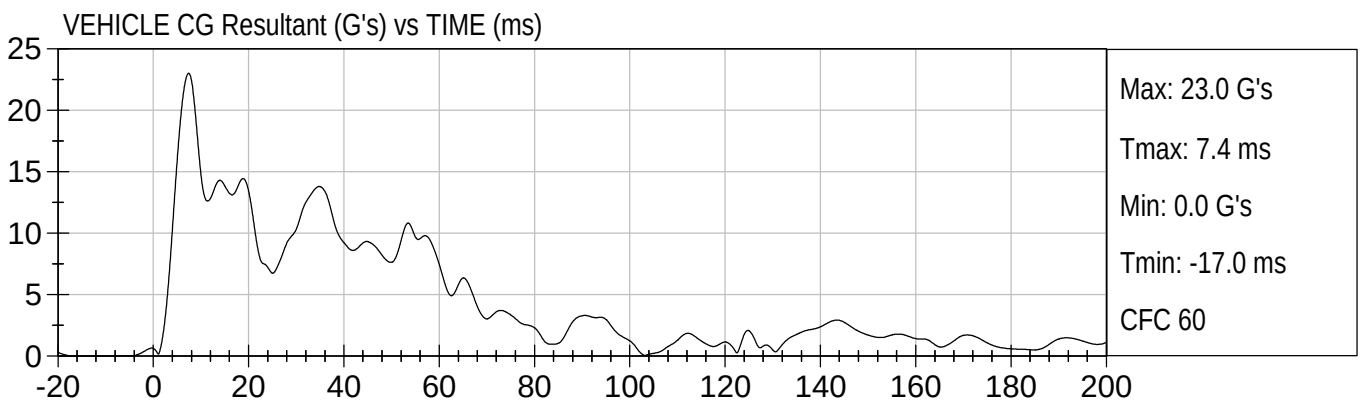
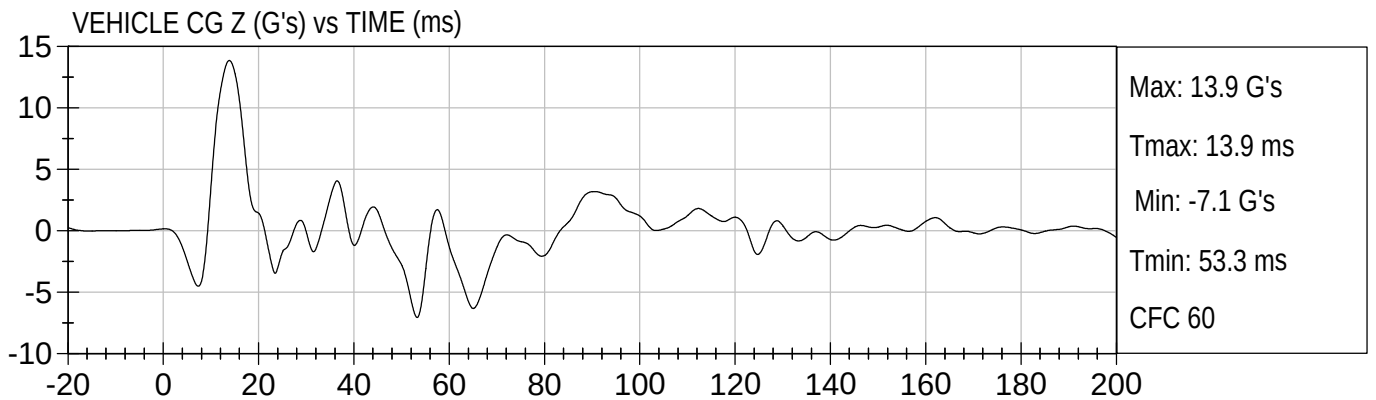
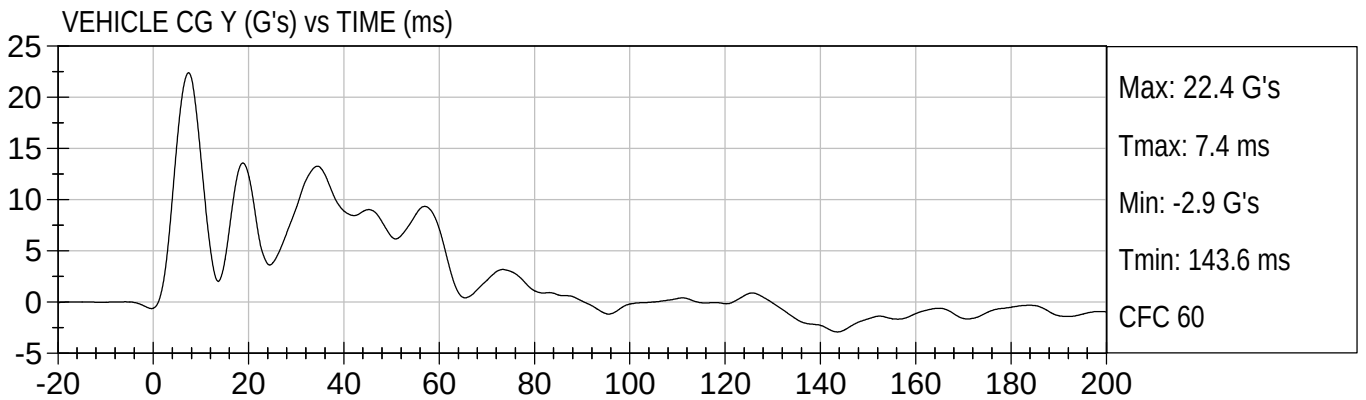
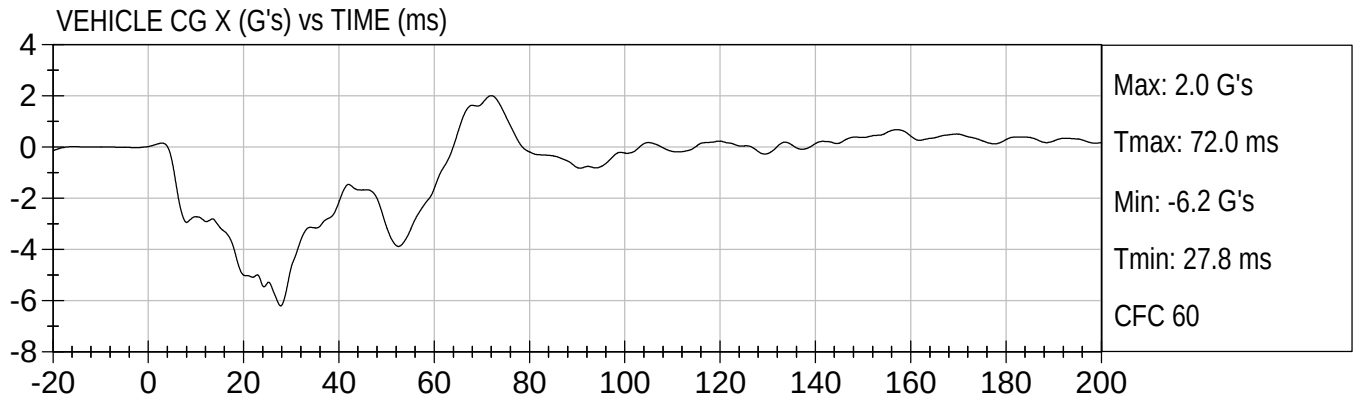
LEFT MID A-POST Y (G's) vs TIME (ms)



LEFT MID A-POST Y Velocity (kph) vs TIME (ms)

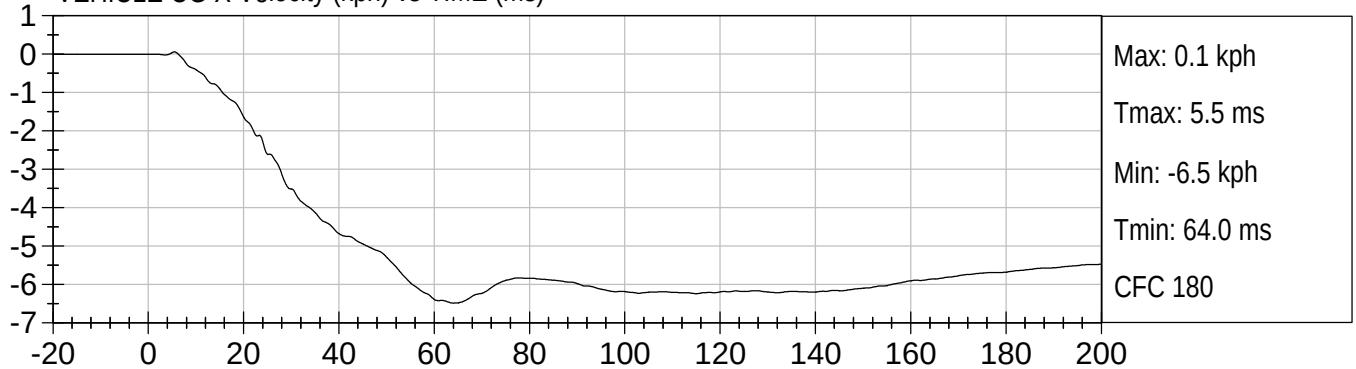




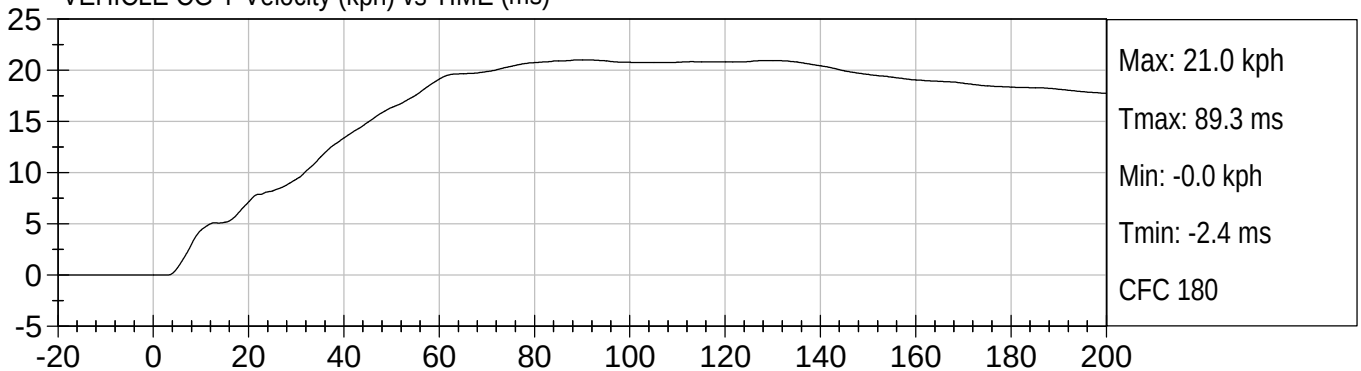




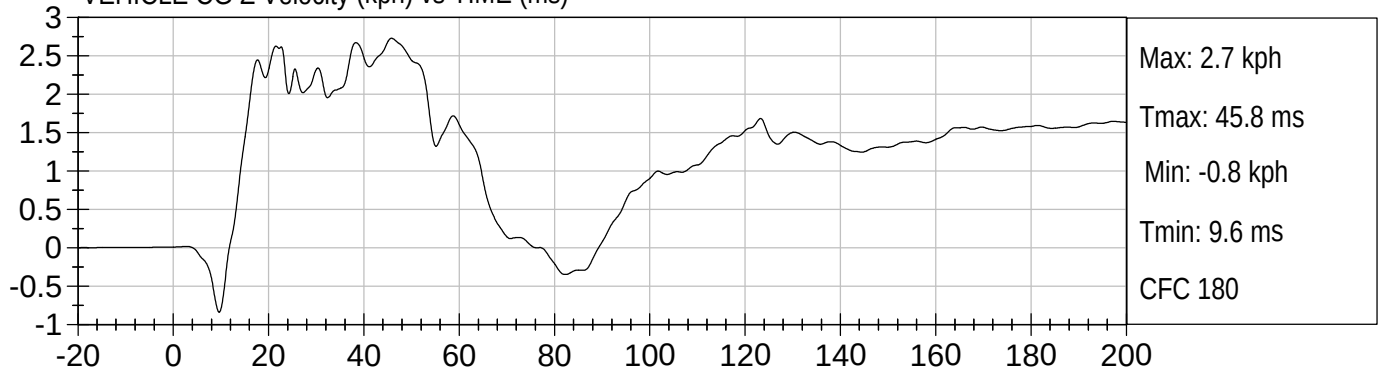
VEHICLE CG X Velocity (kph) vs TIME (ms)

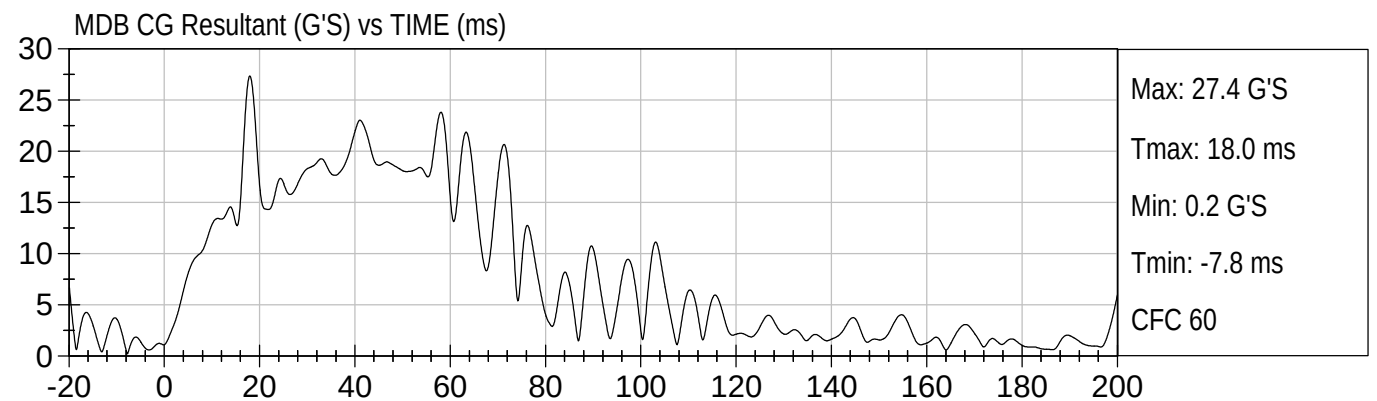
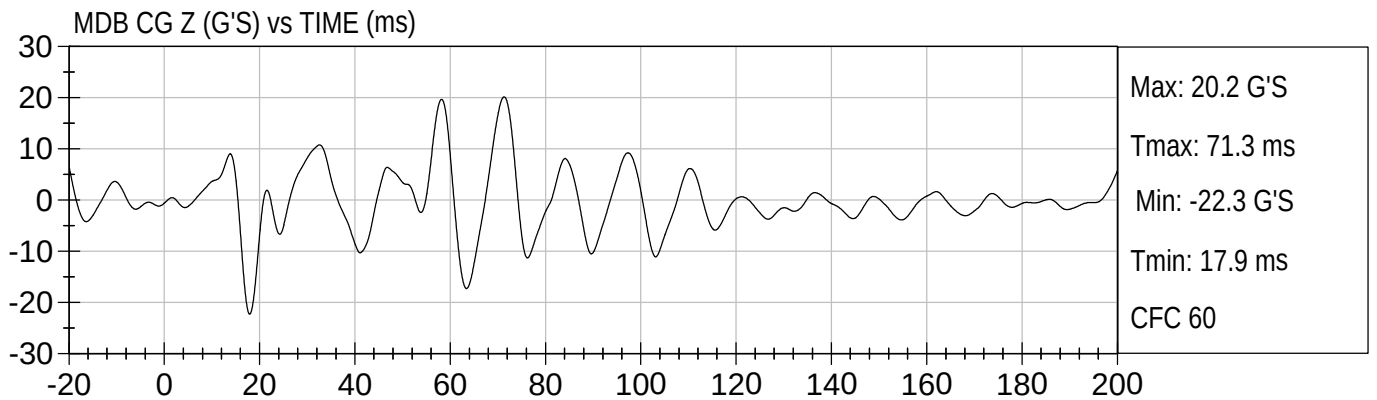
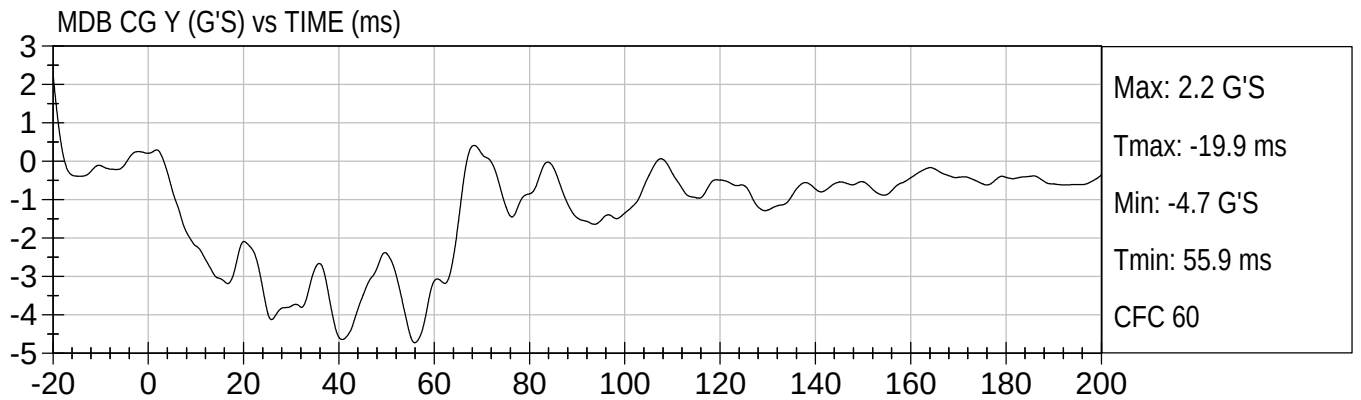
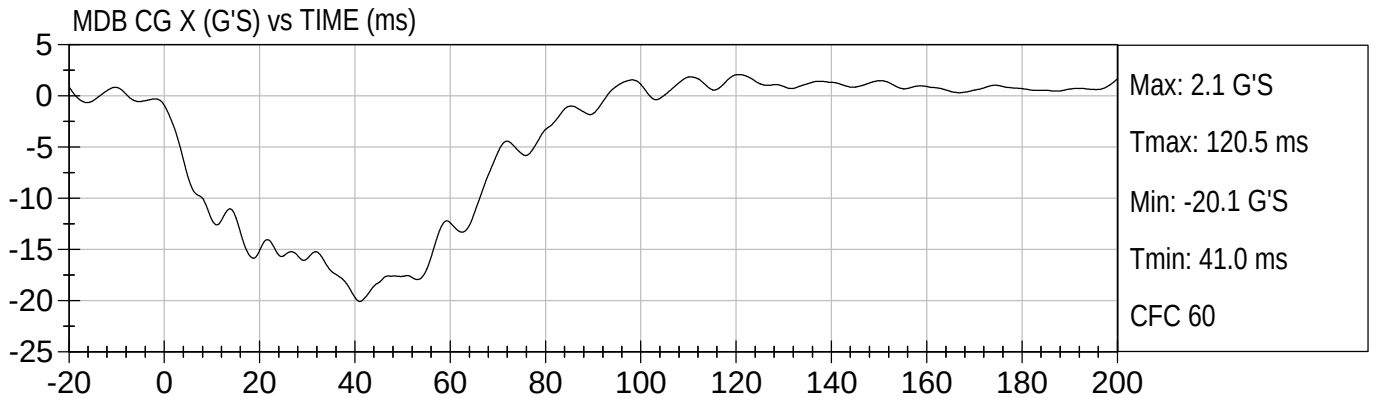


VEHICLE CG Y Velocity (kph) vs TIME (ms)



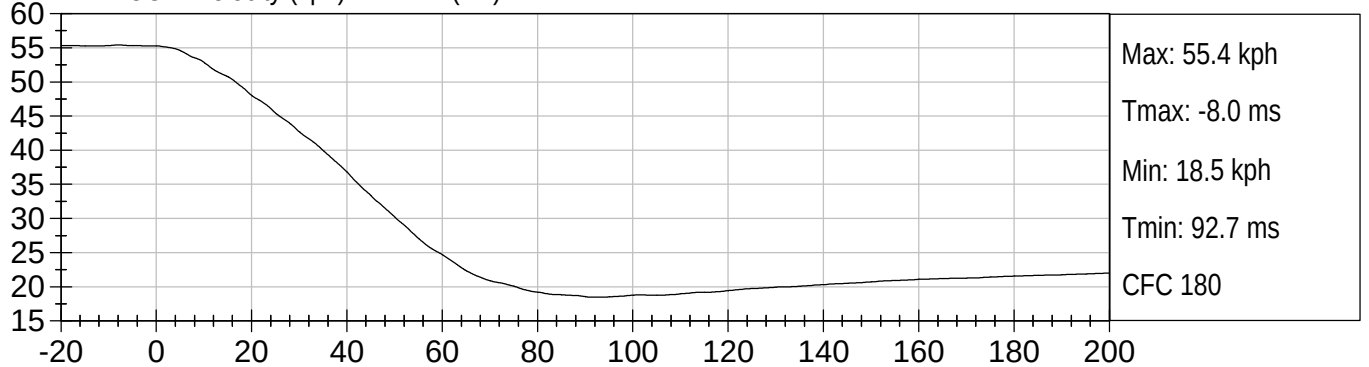
VEHICLE CG Z Velocity (kph) vs TIME (ms)



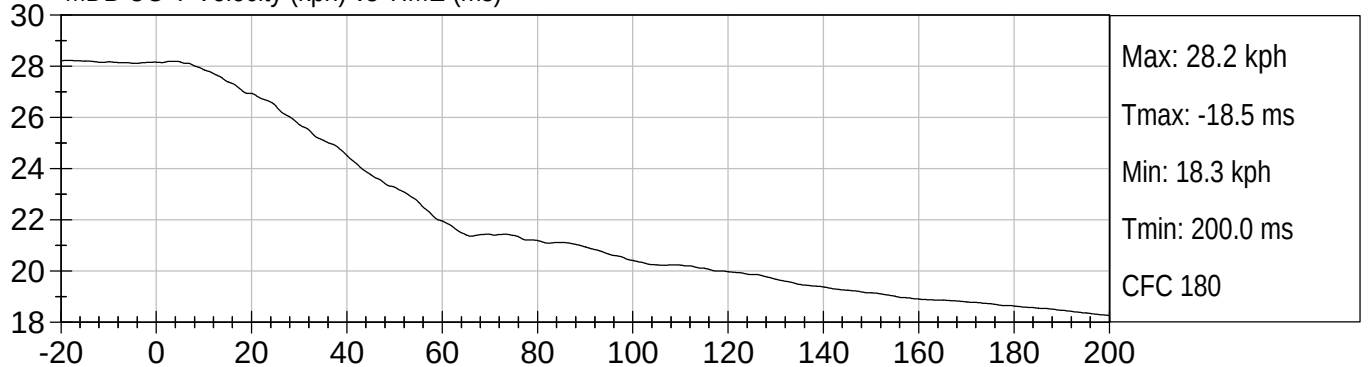




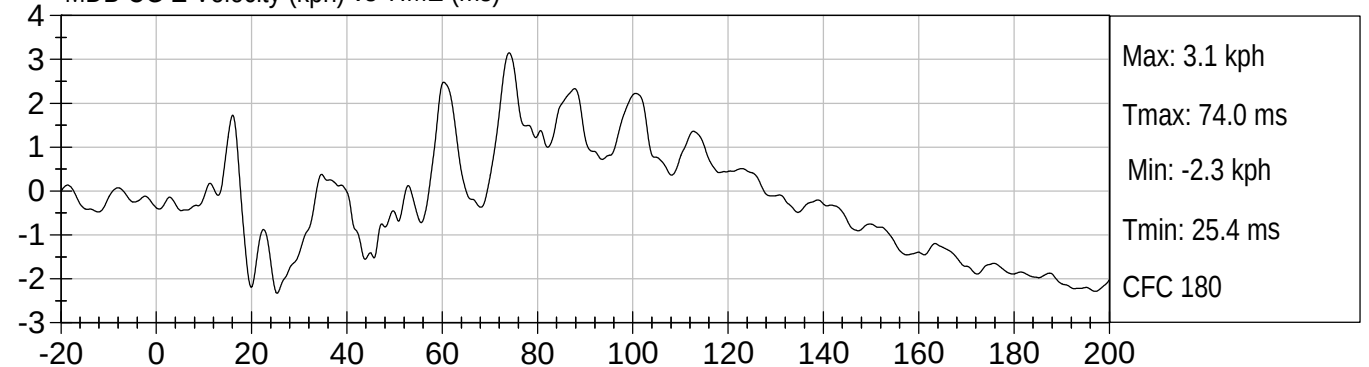
MDB CG X Velocity (kph) vs TIME (ms)

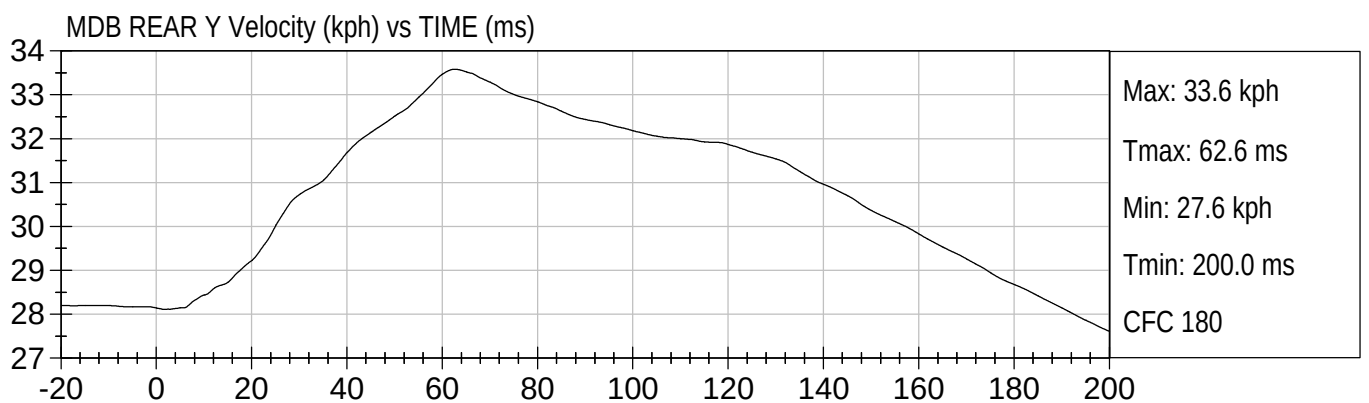
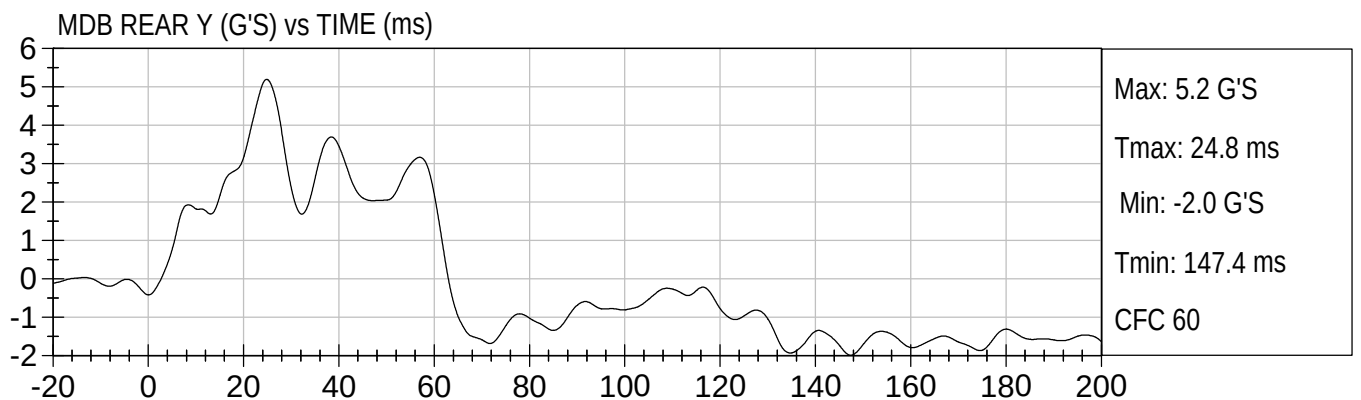
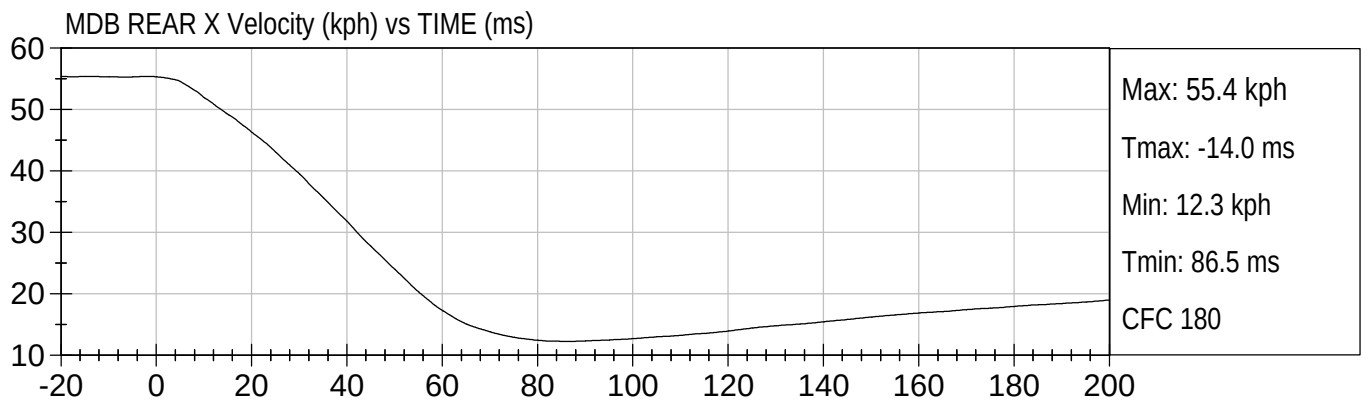
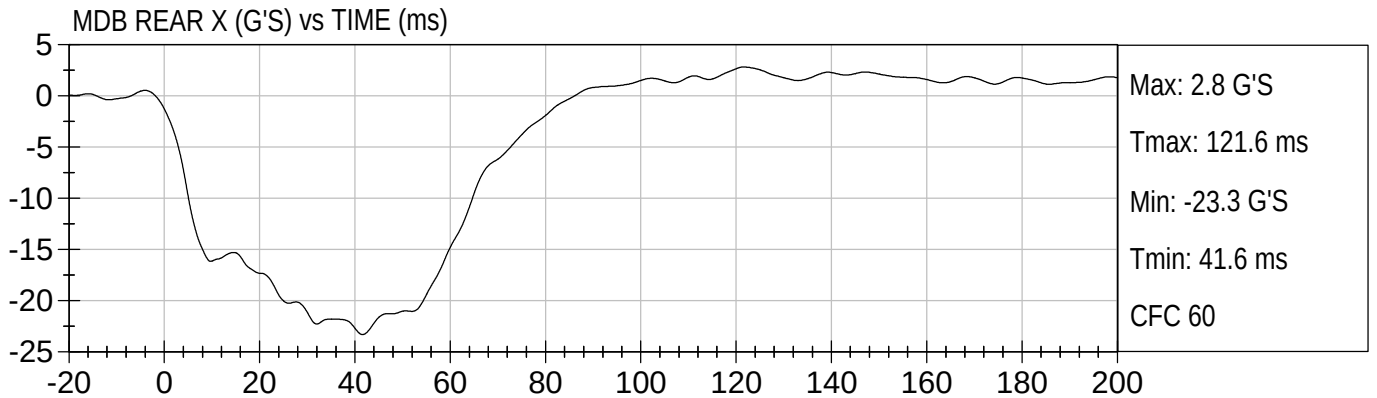


MDB CG Y Velocity (kph) vs TIME (ms)



MDB CG Z Velocity (kph) vs TIME (ms)

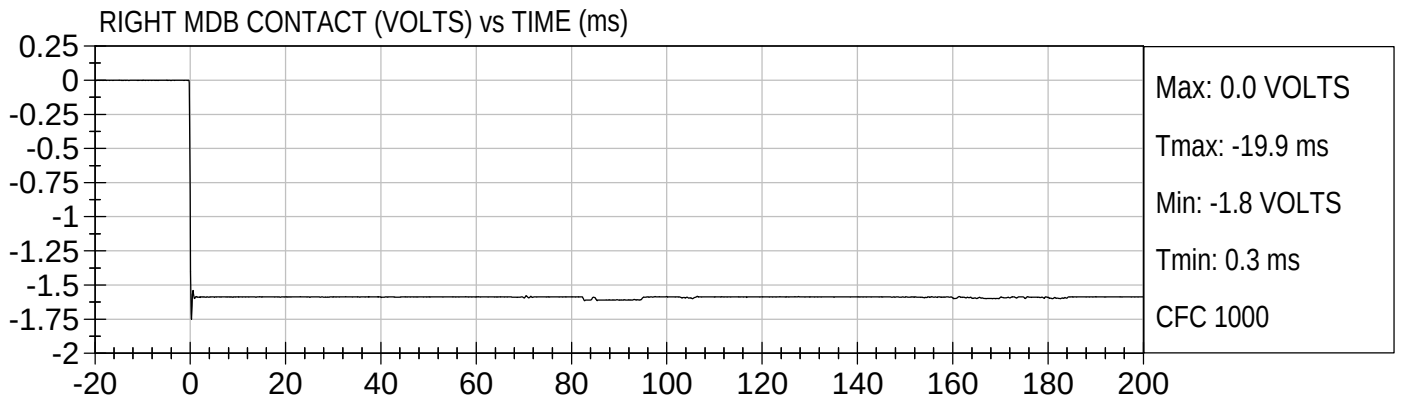
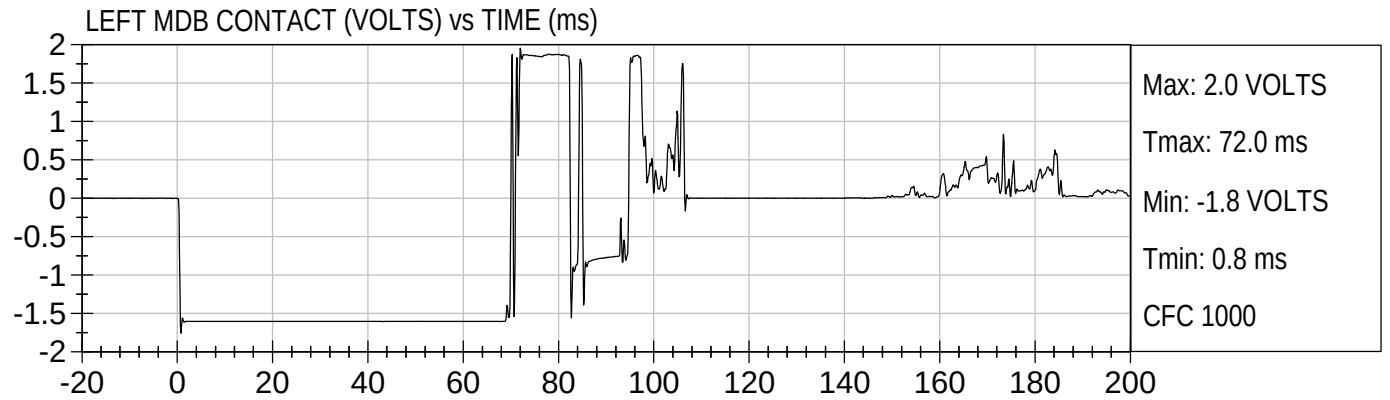


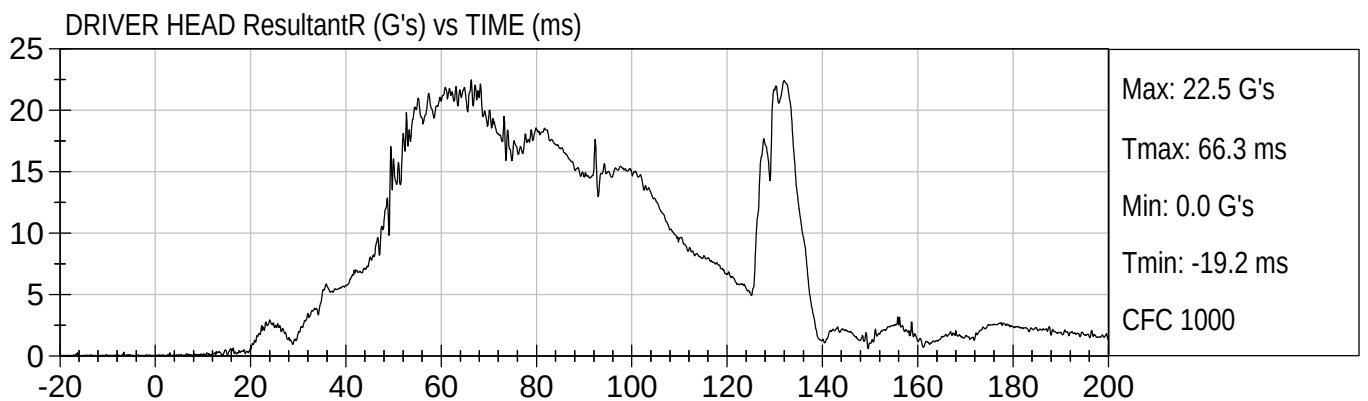
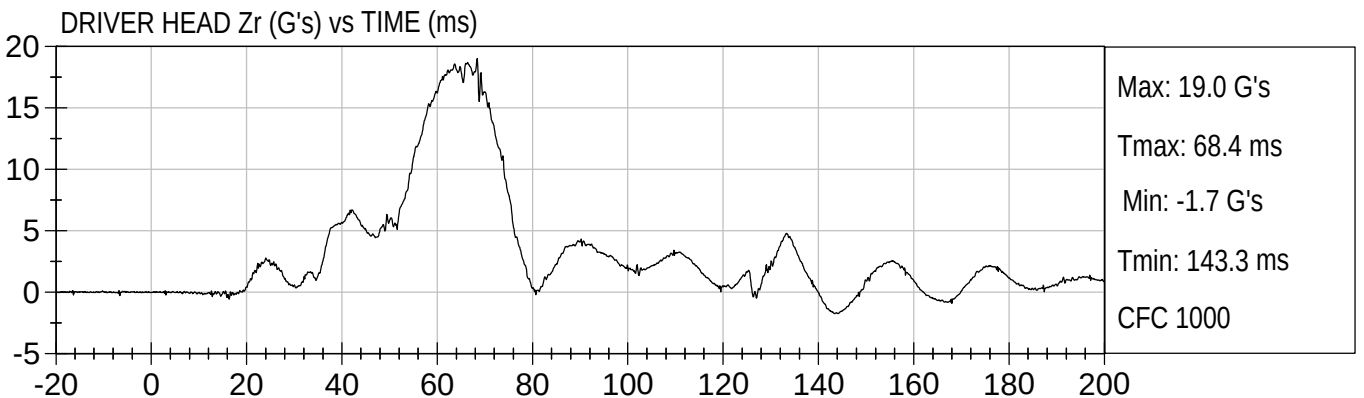
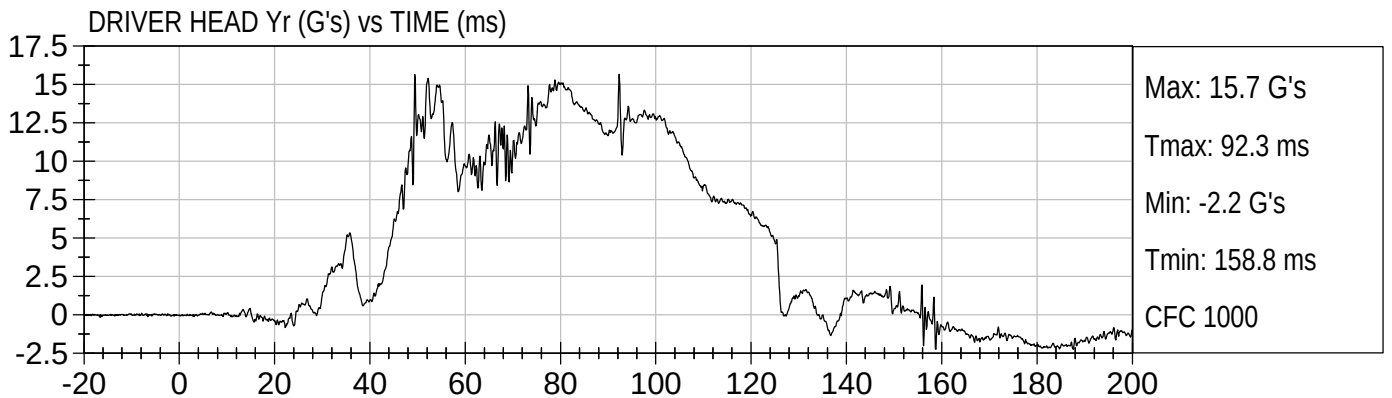
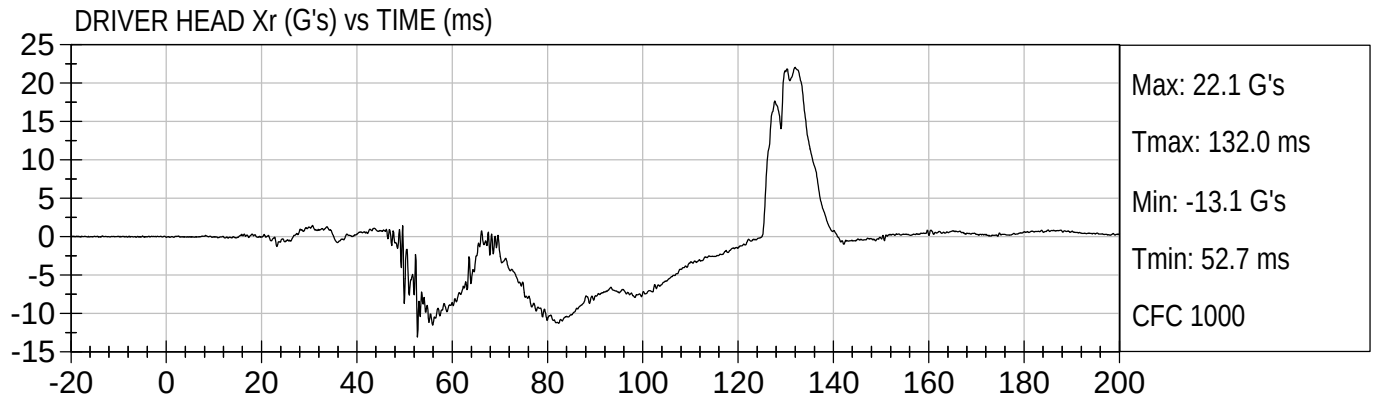


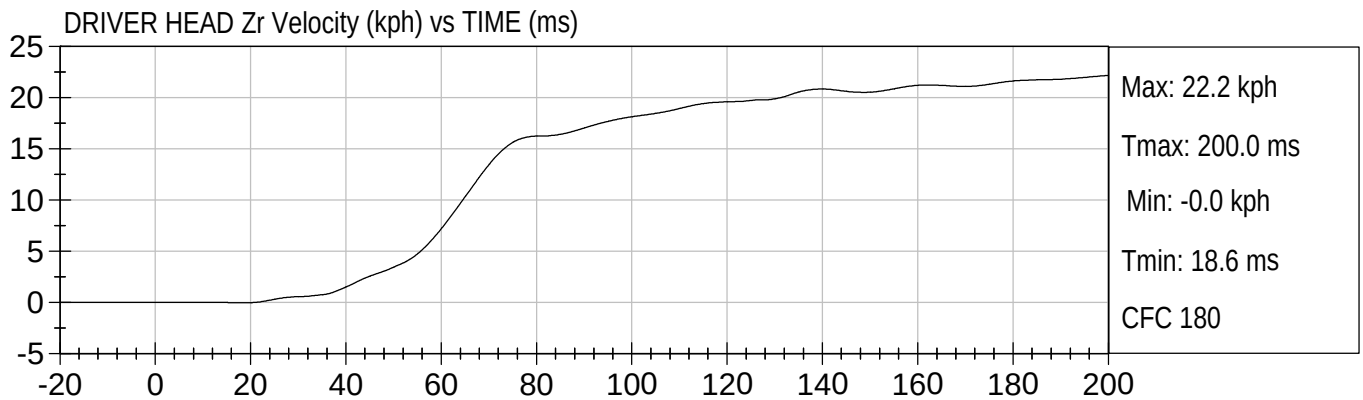
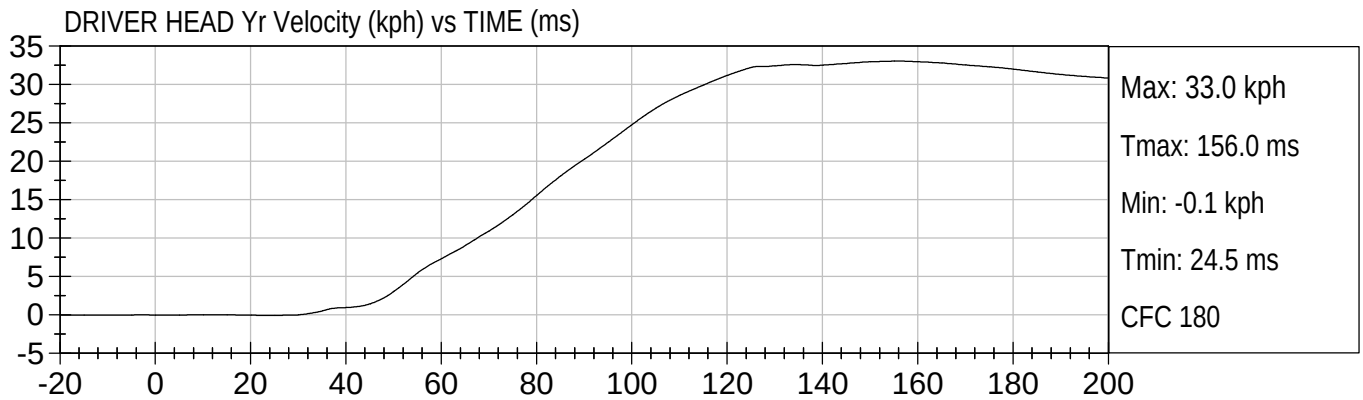
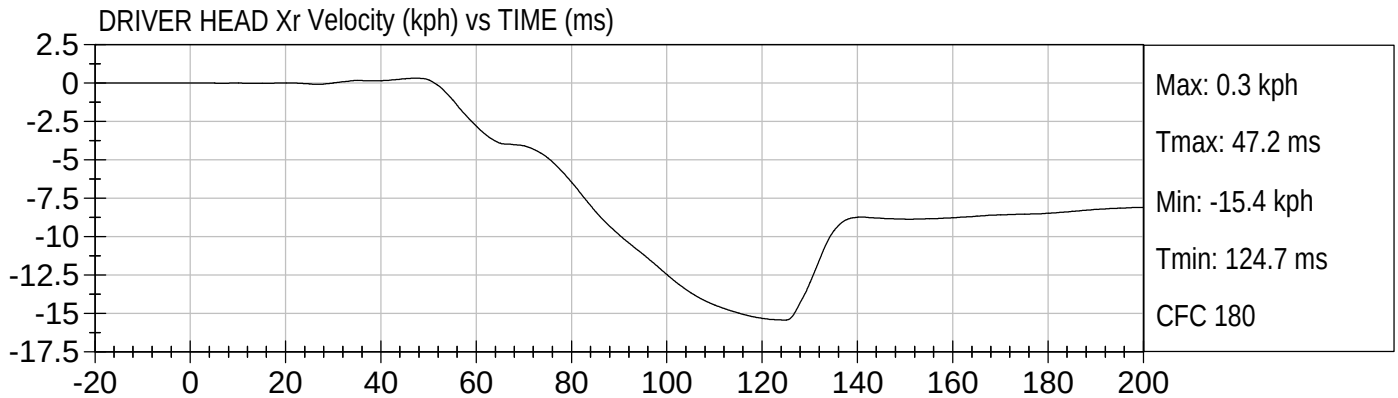


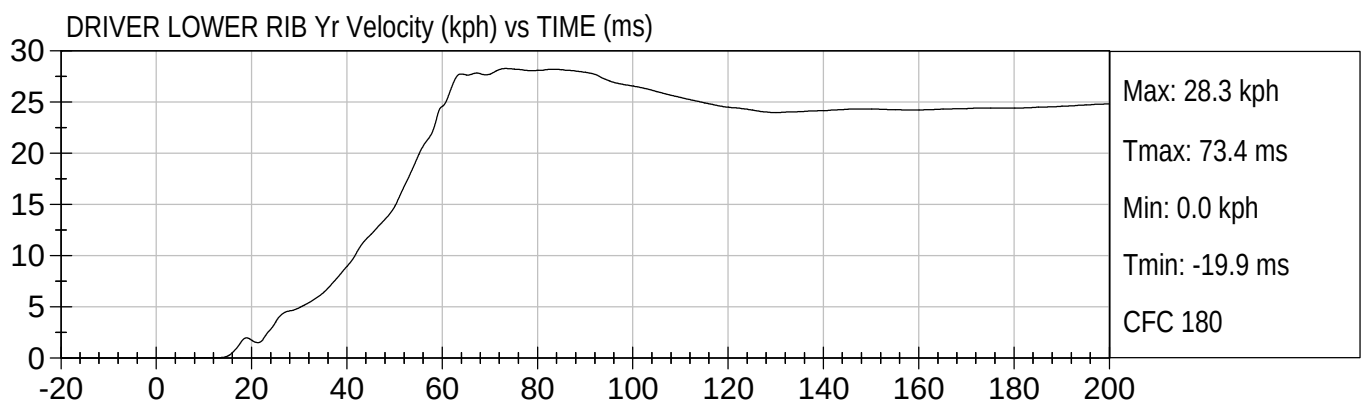
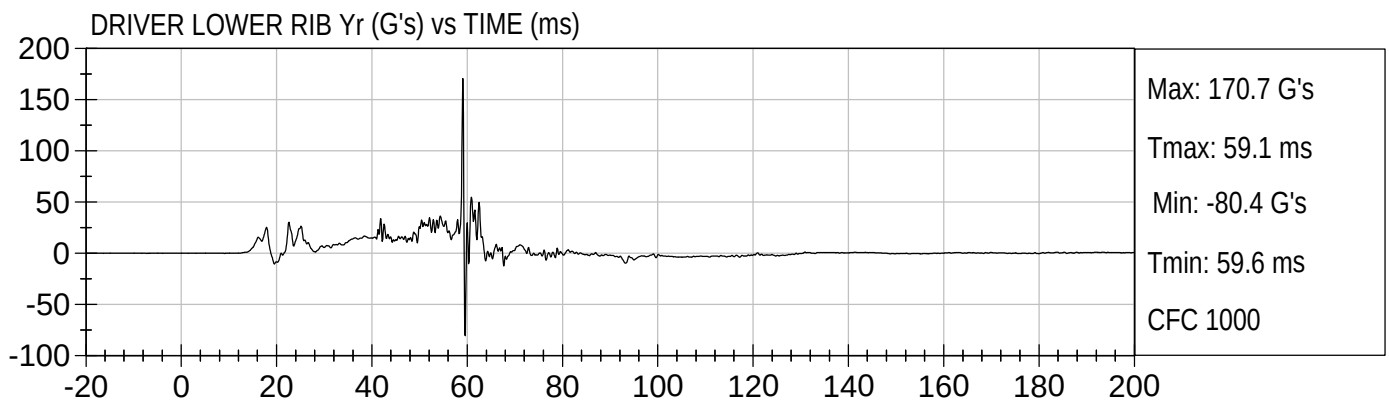
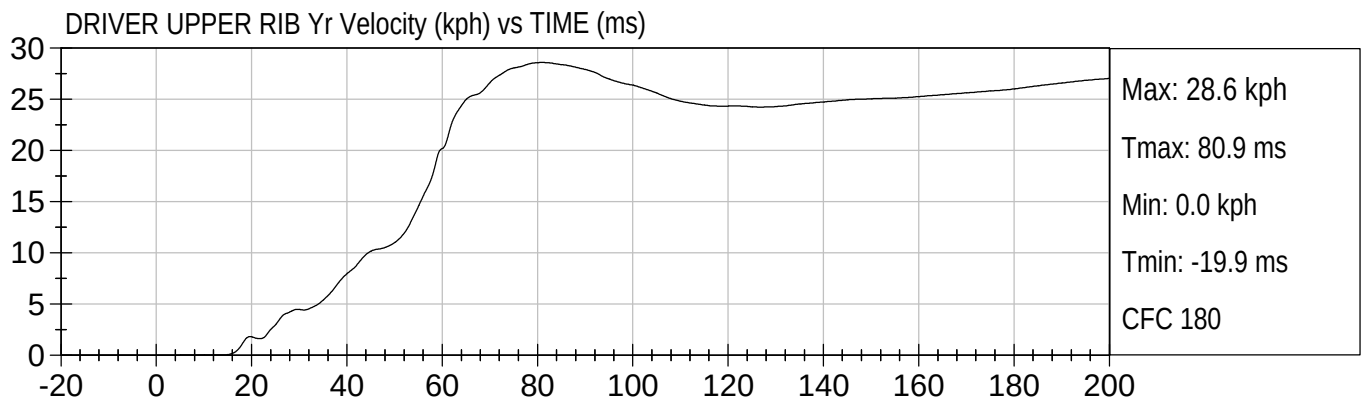
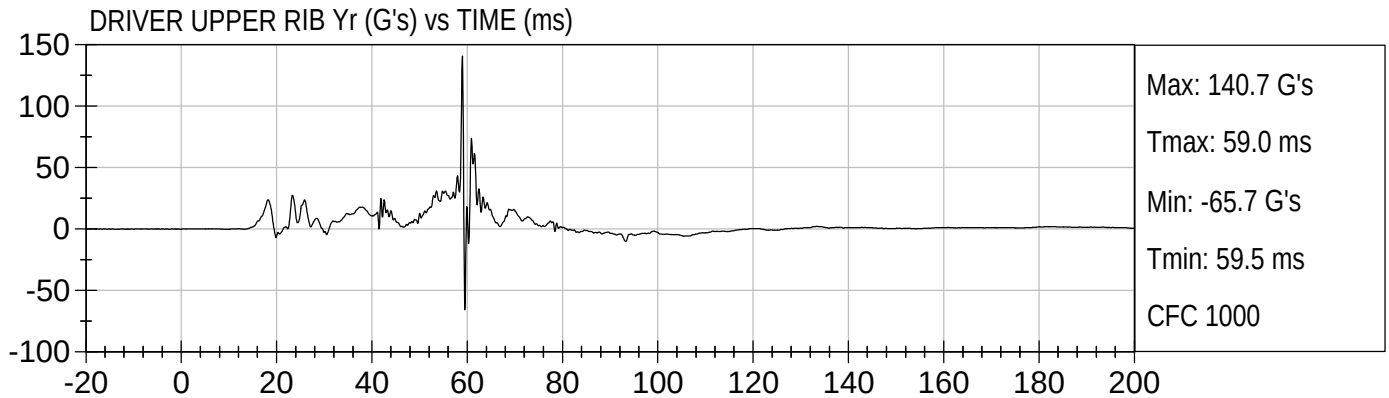
214 INDICANT SIDE IMPACT
2002,HONDA,ODYSSEY (C25304)

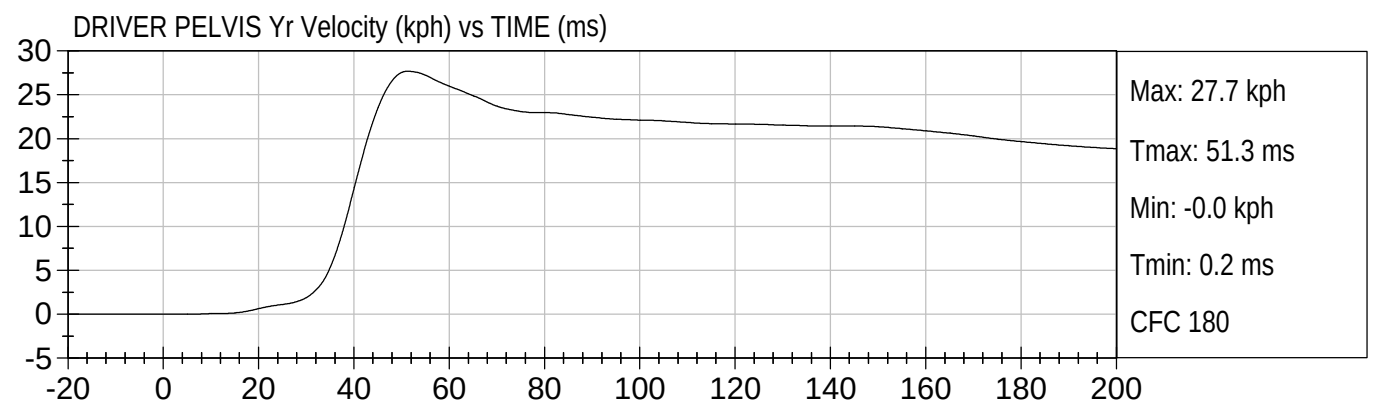
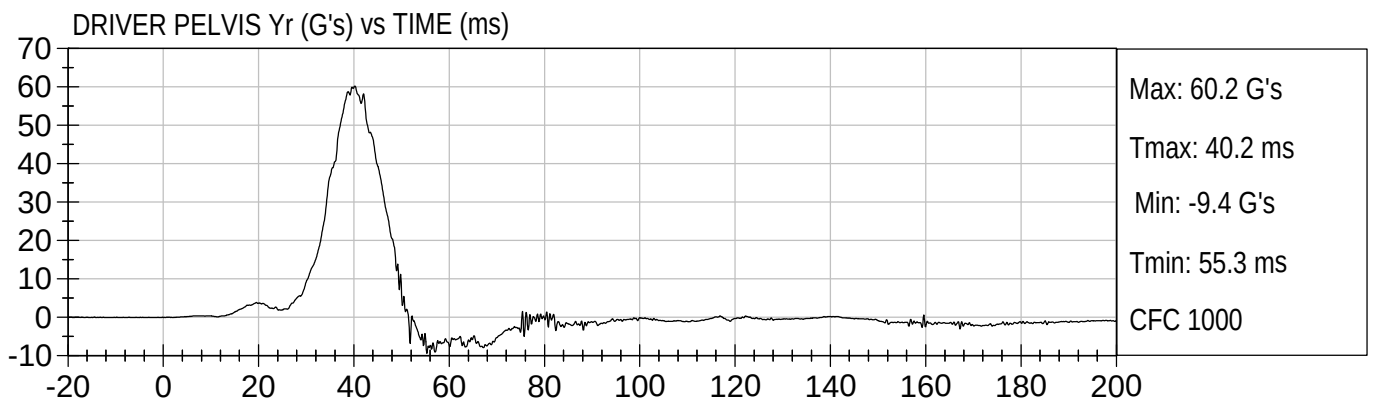
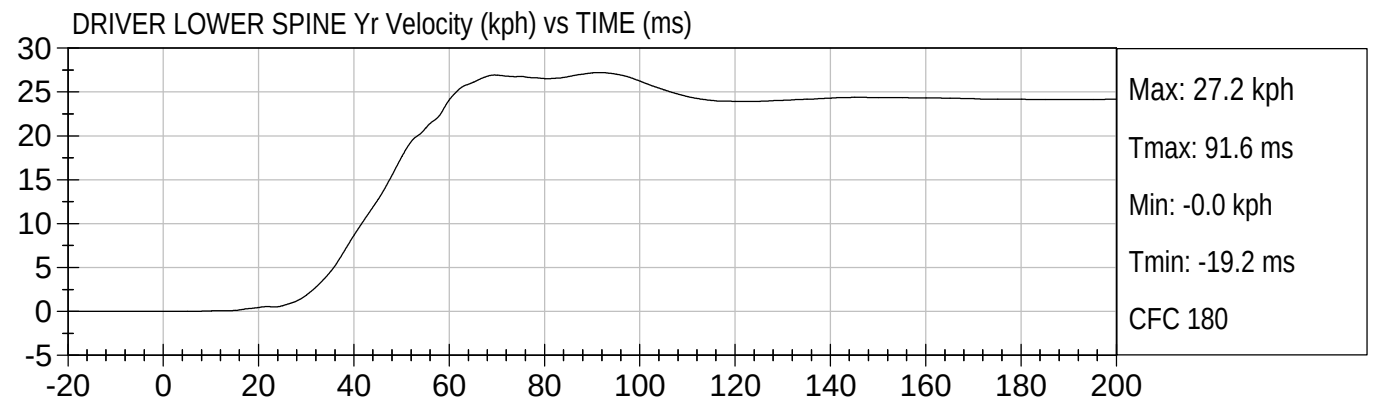
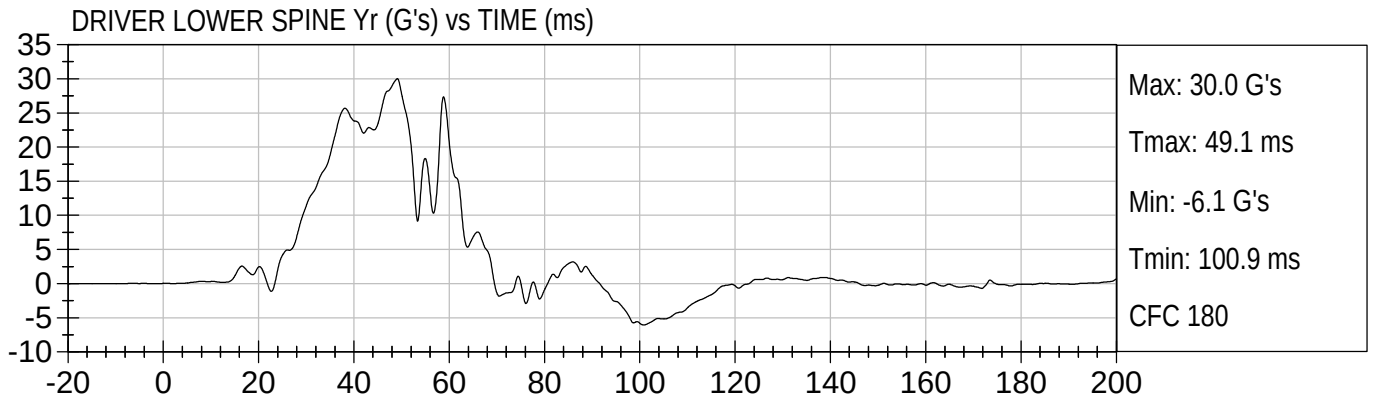
Test Date: 1/9/02
Speed: 38.6 mph (62.1 km/h)

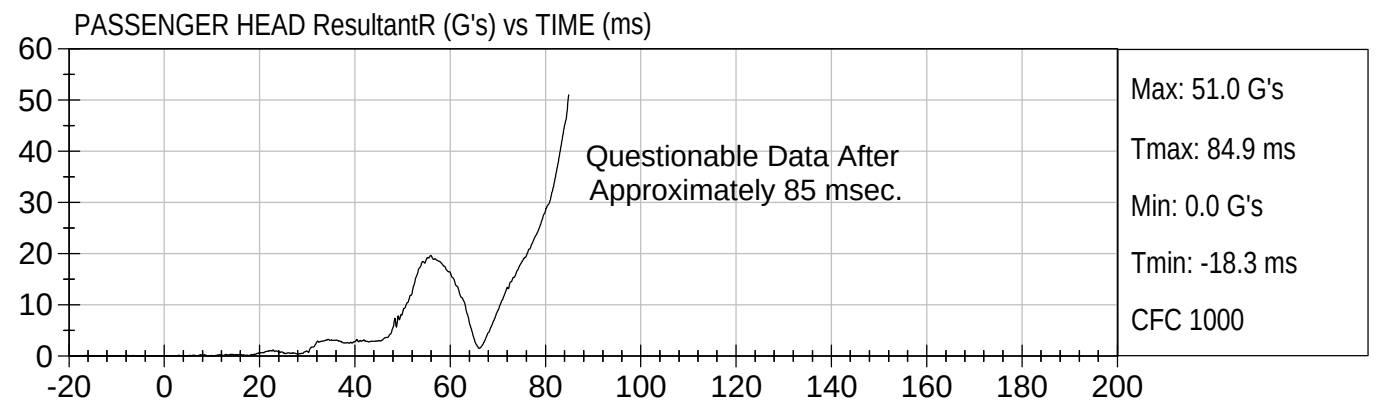
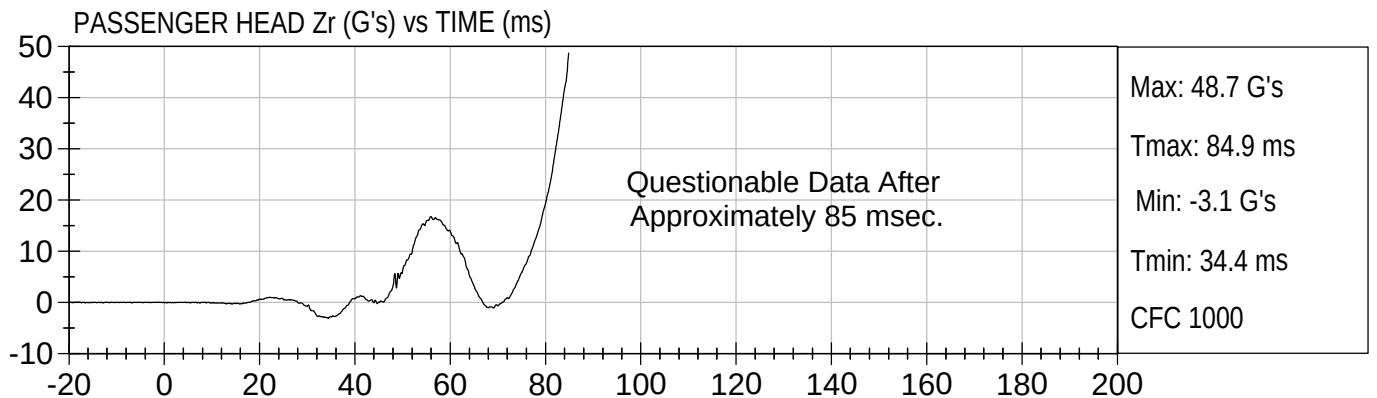
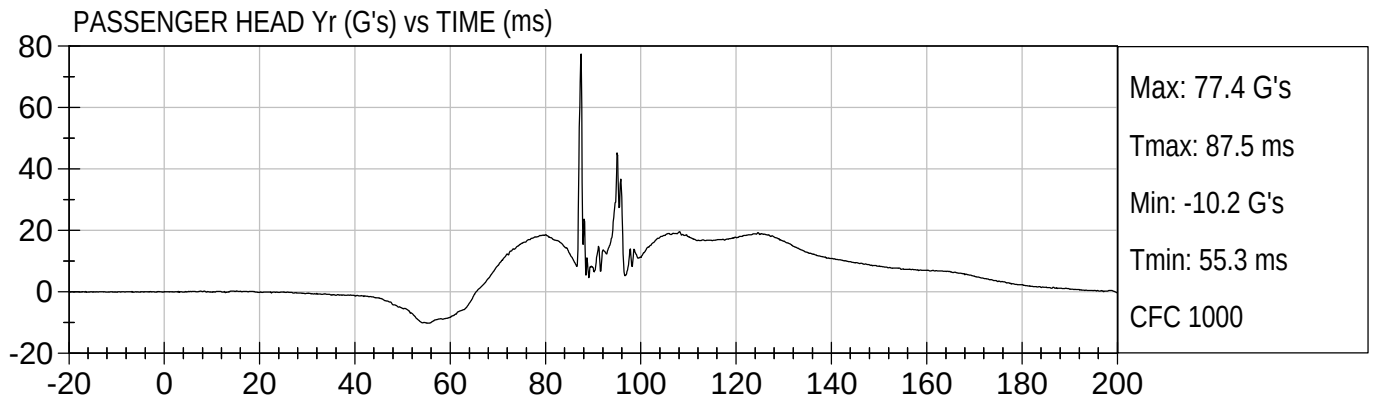
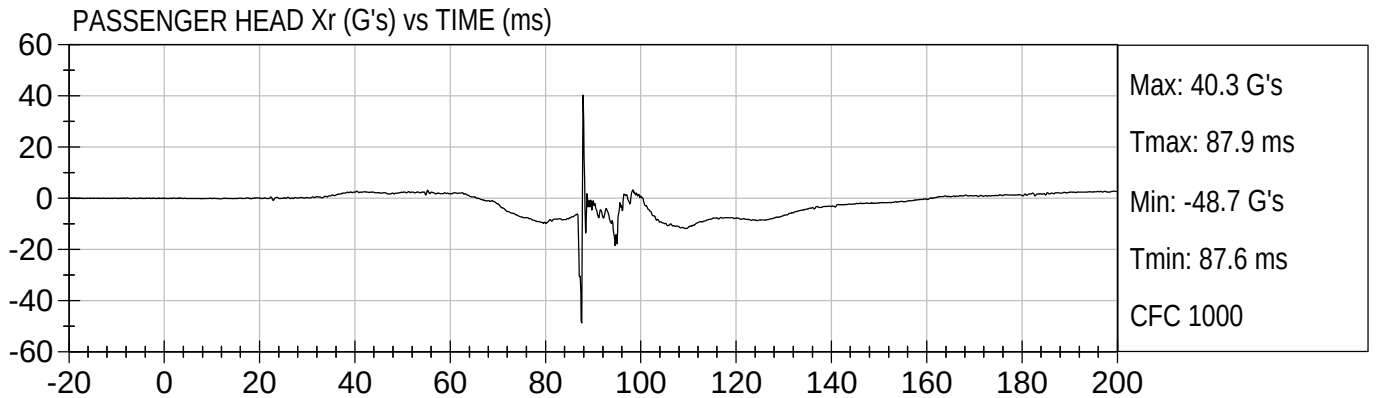


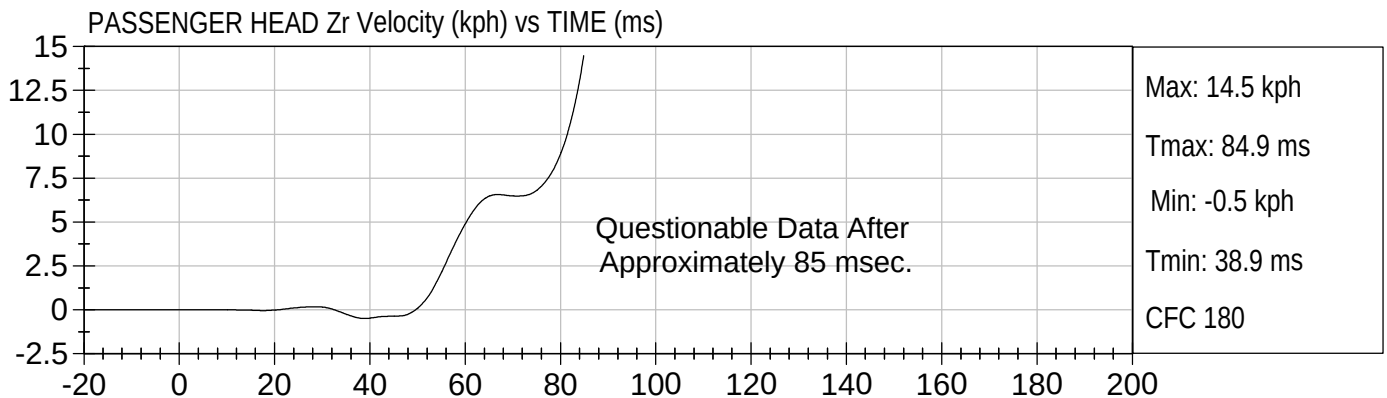
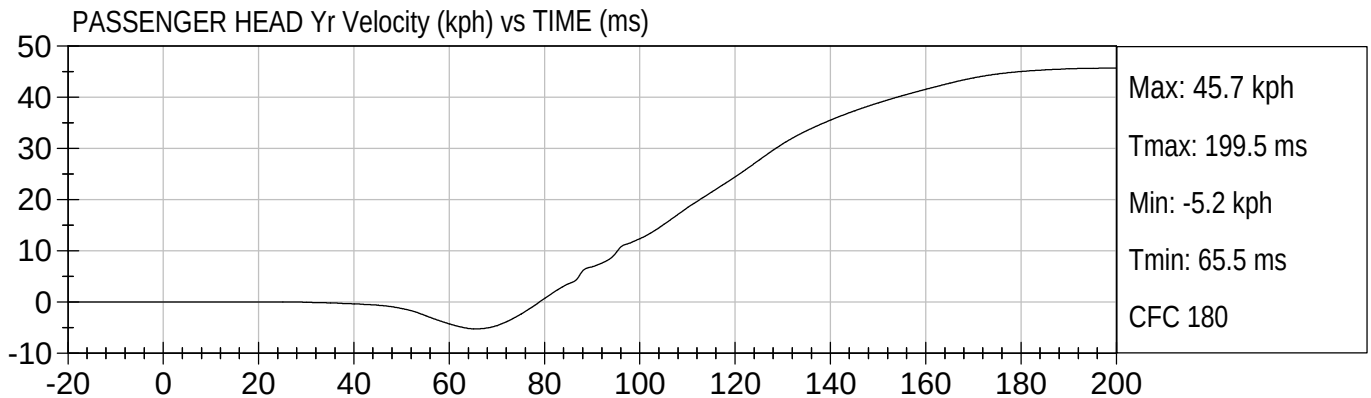
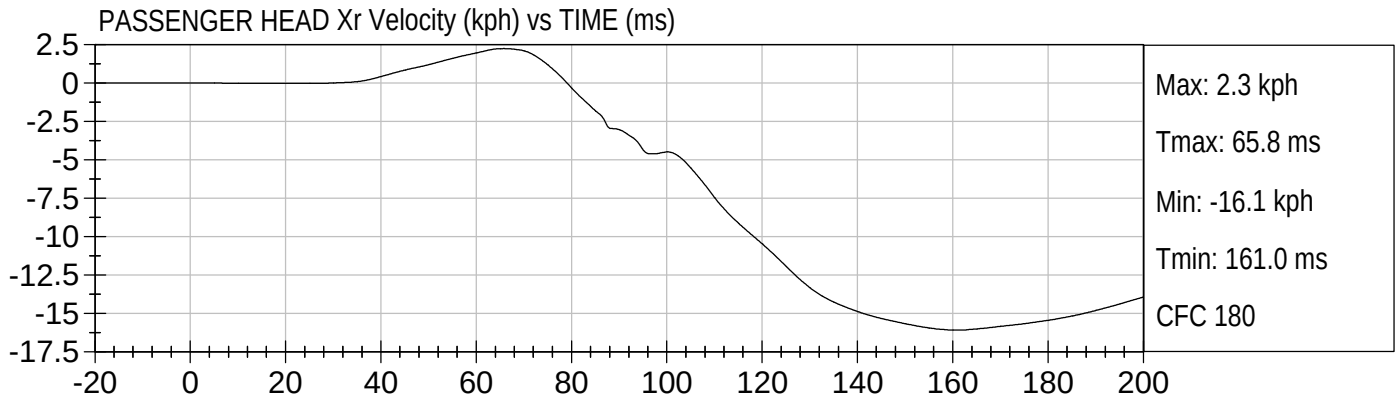


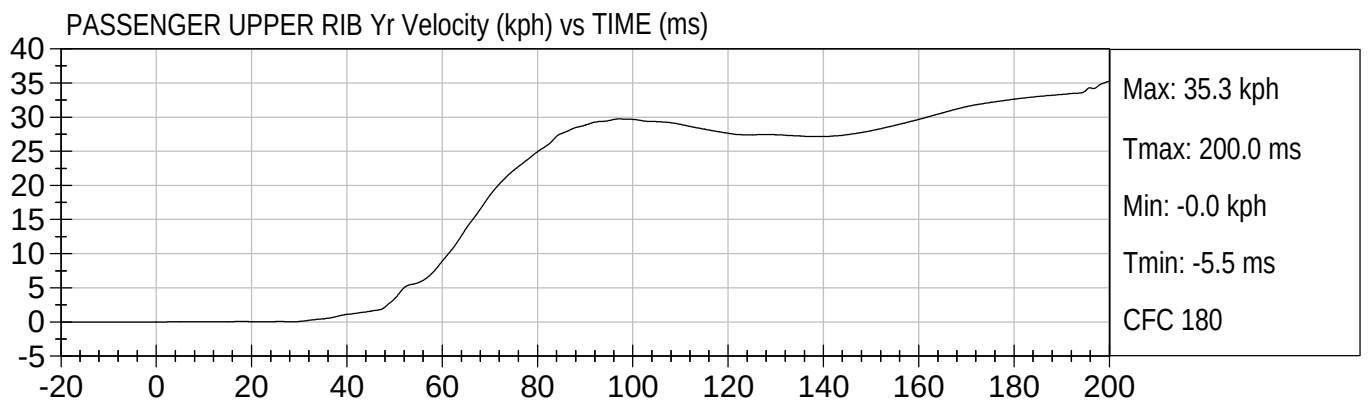
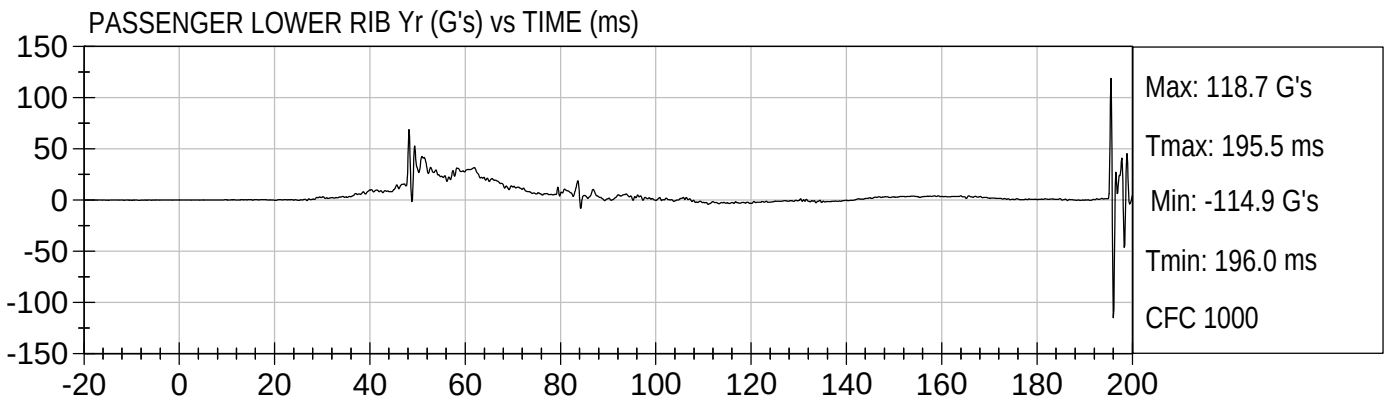
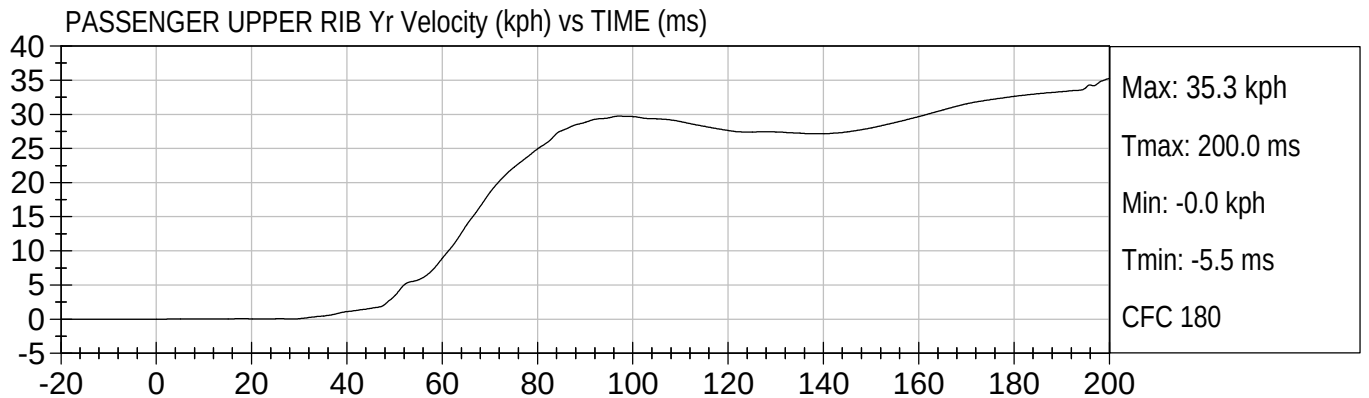
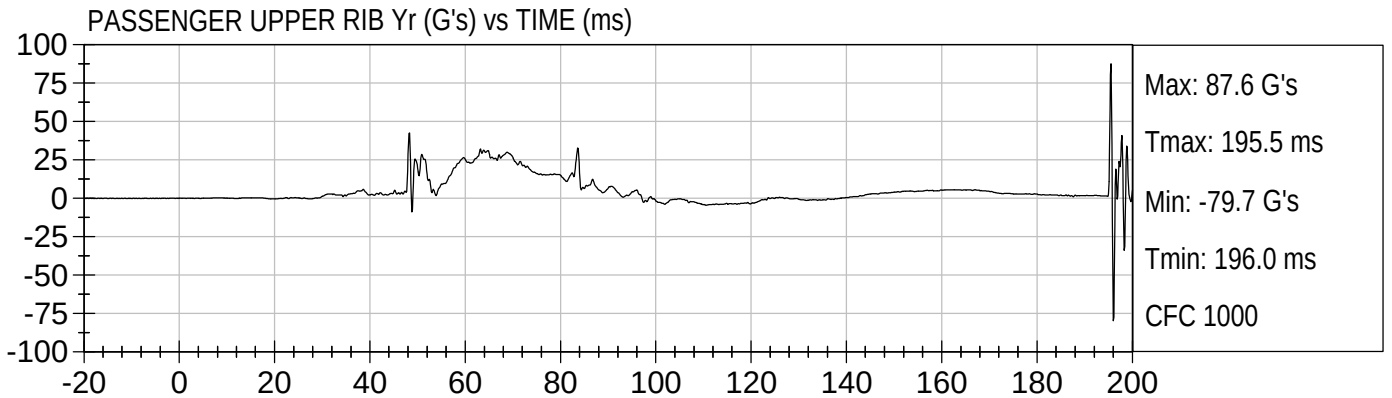


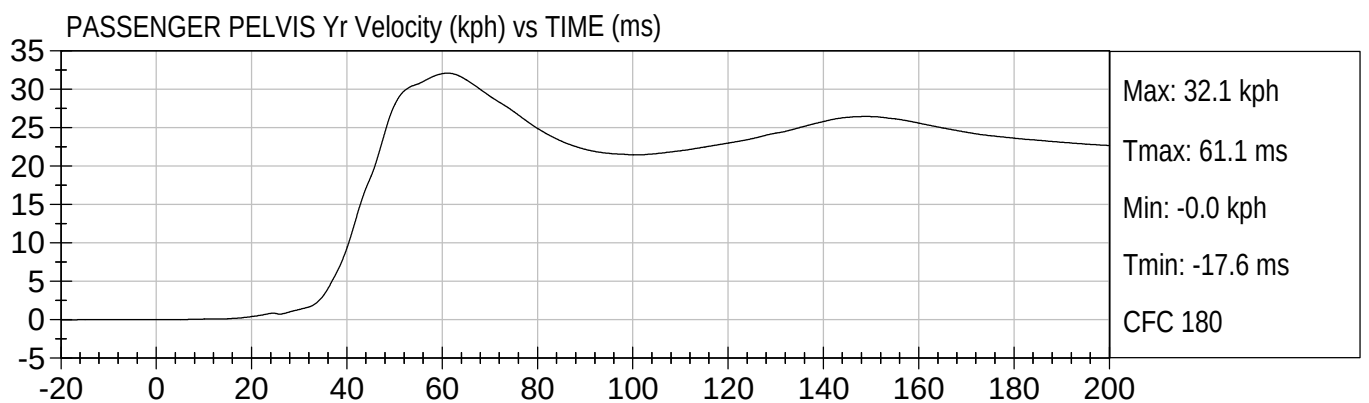
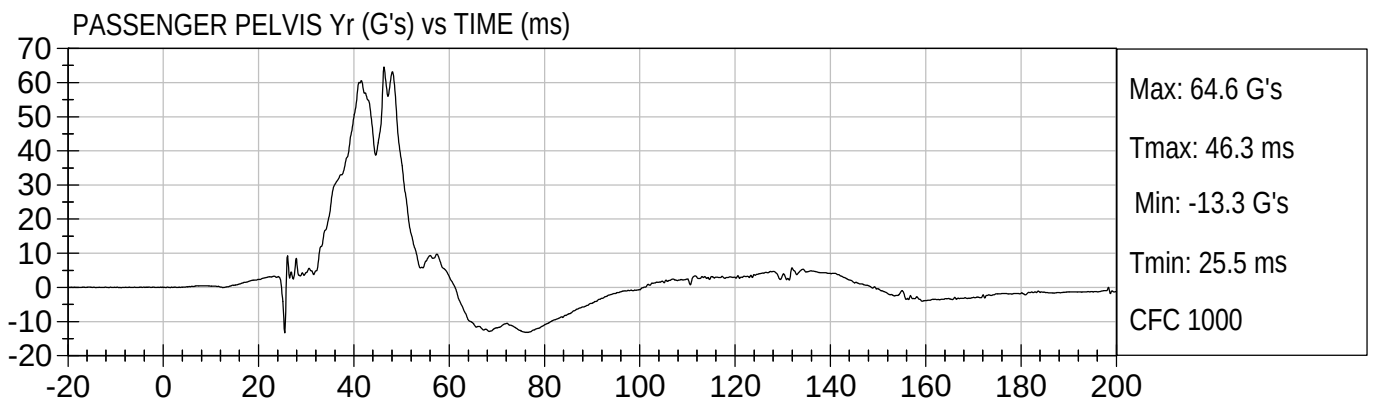
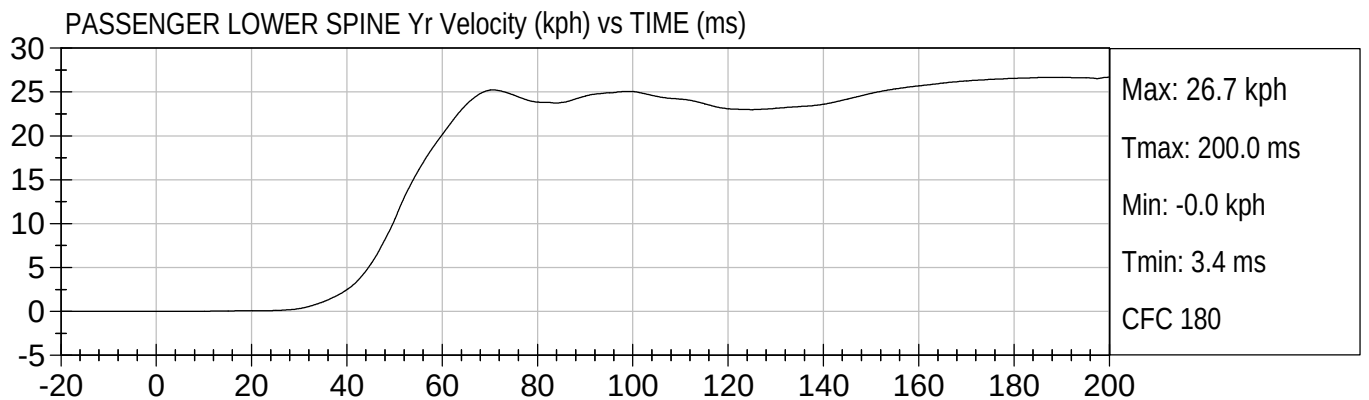
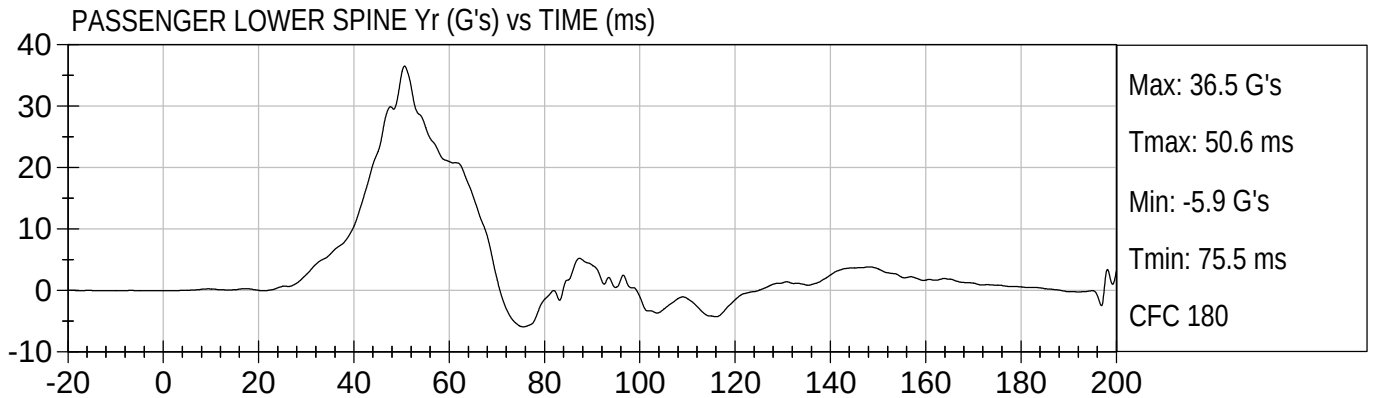


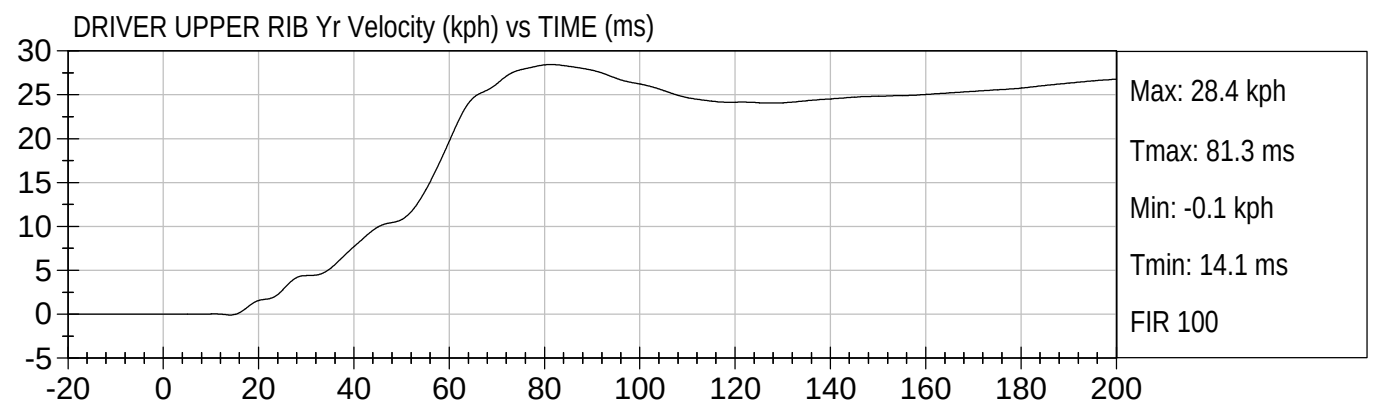
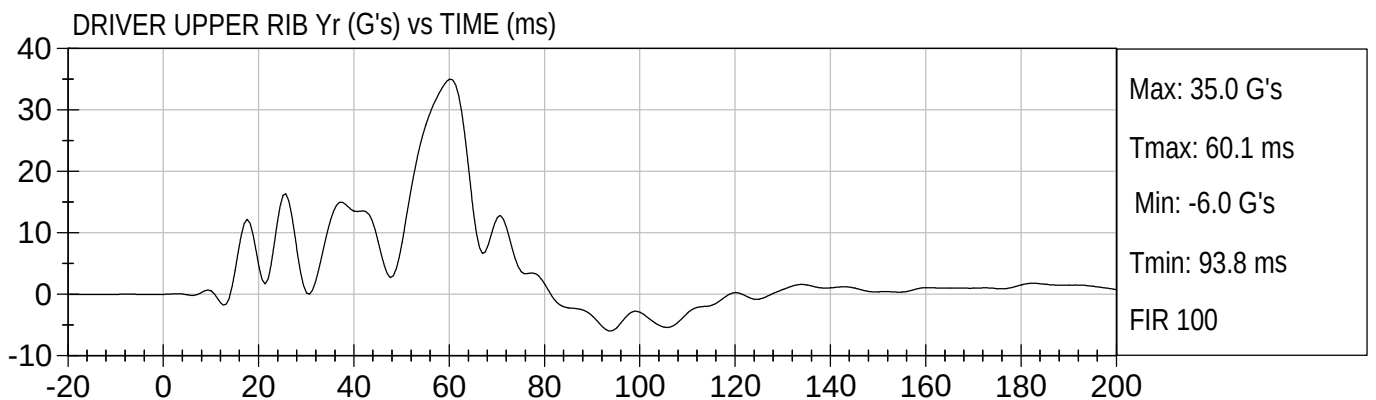
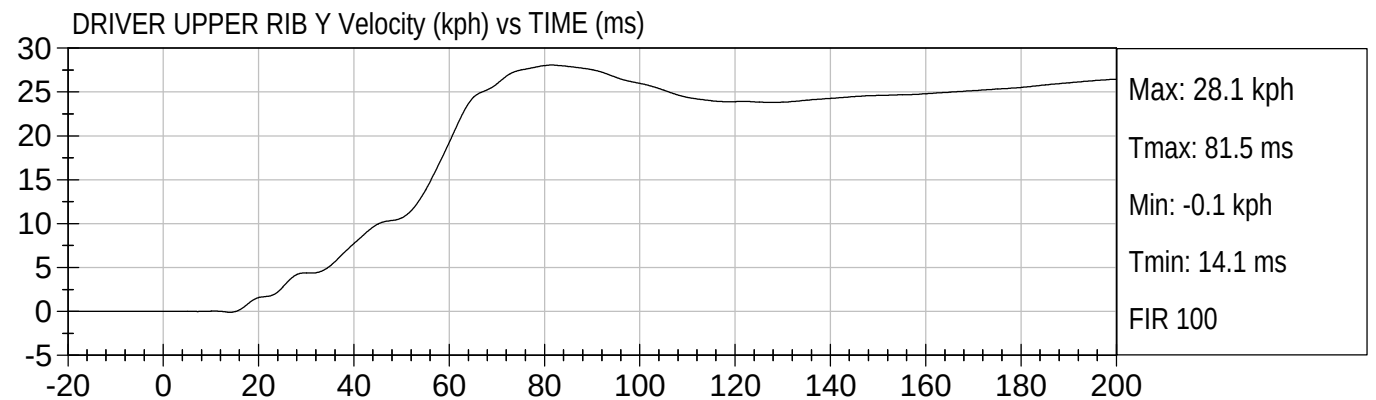
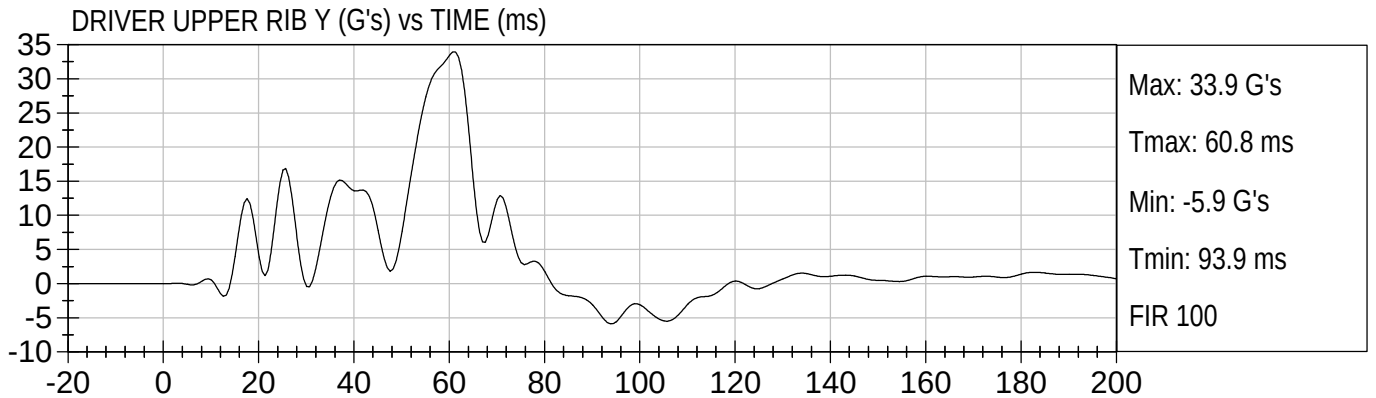


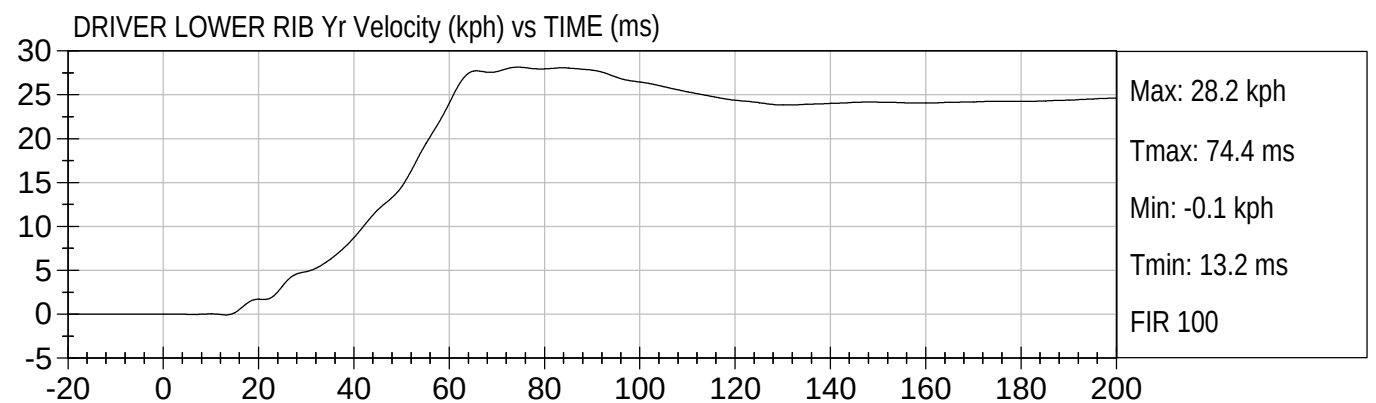
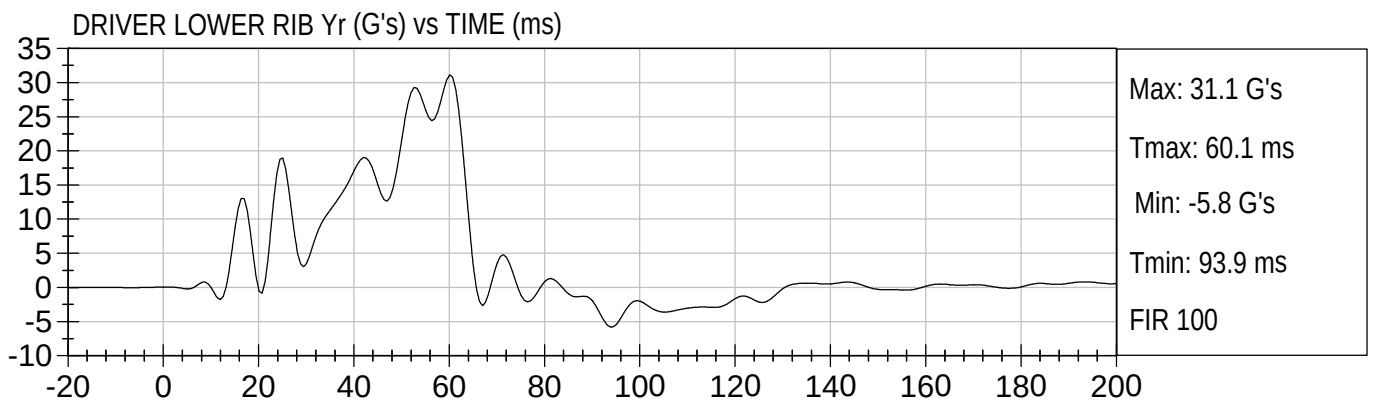
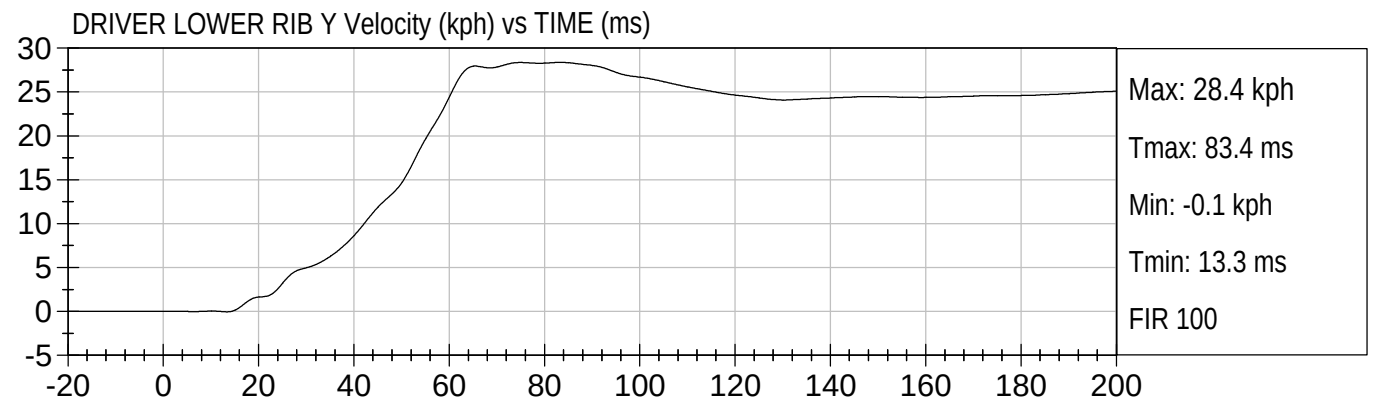
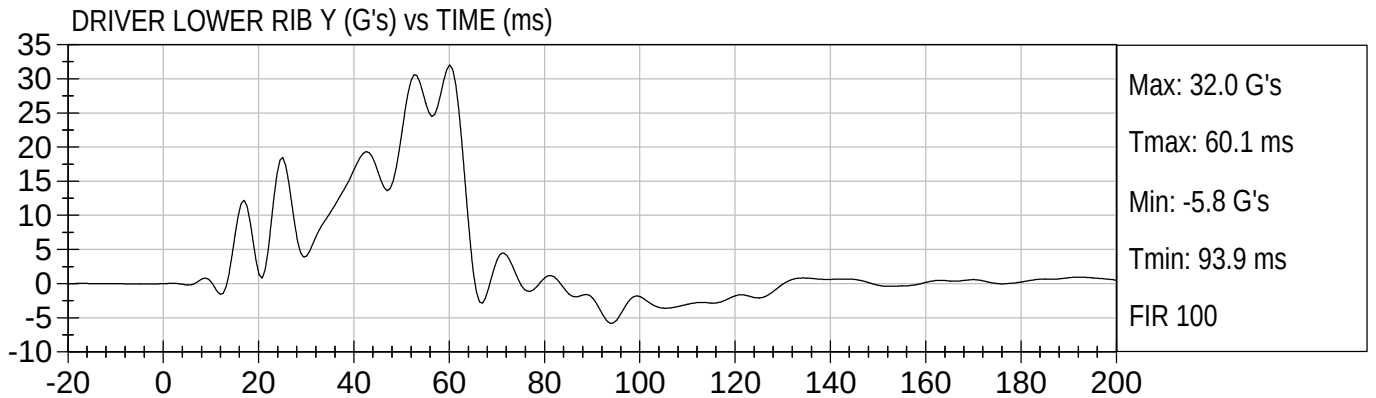


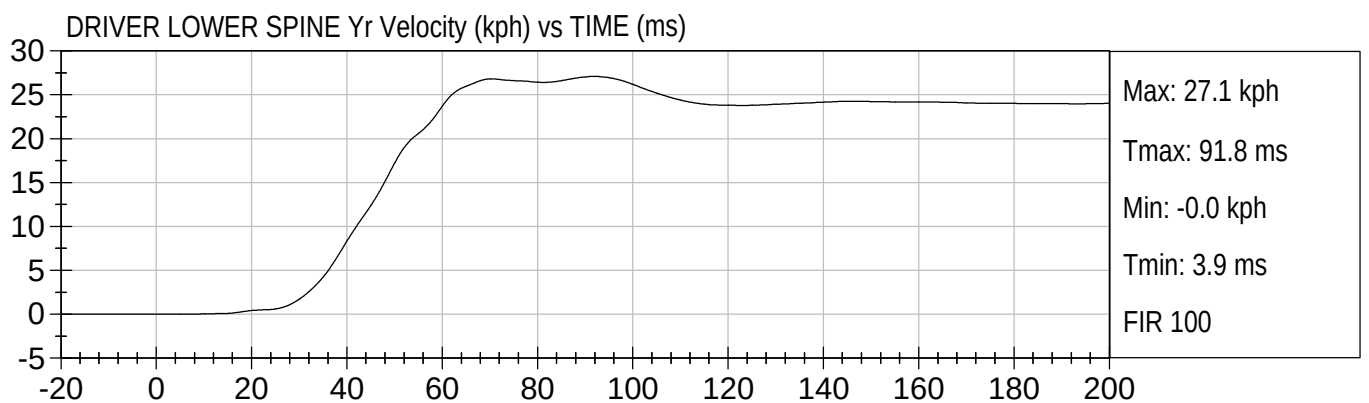
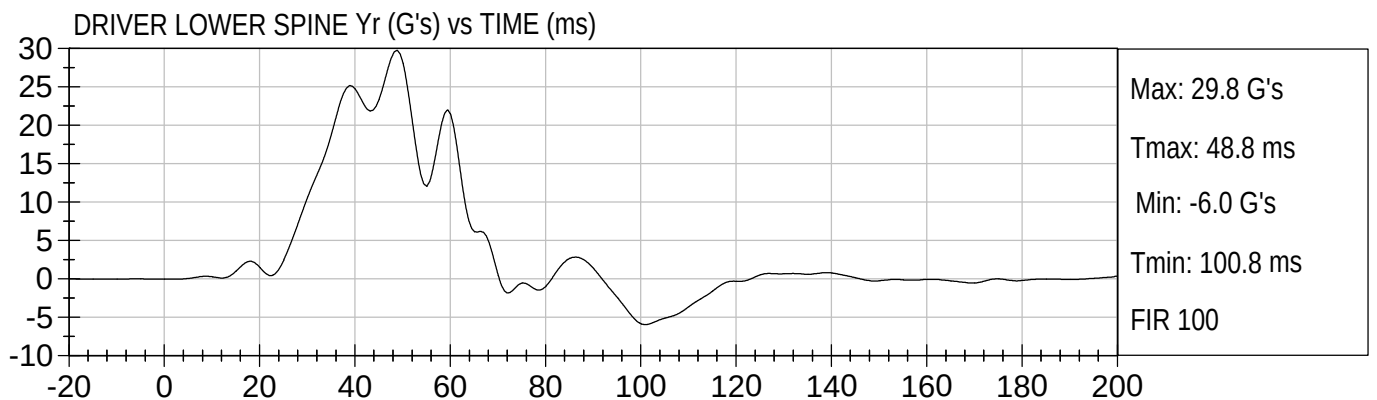
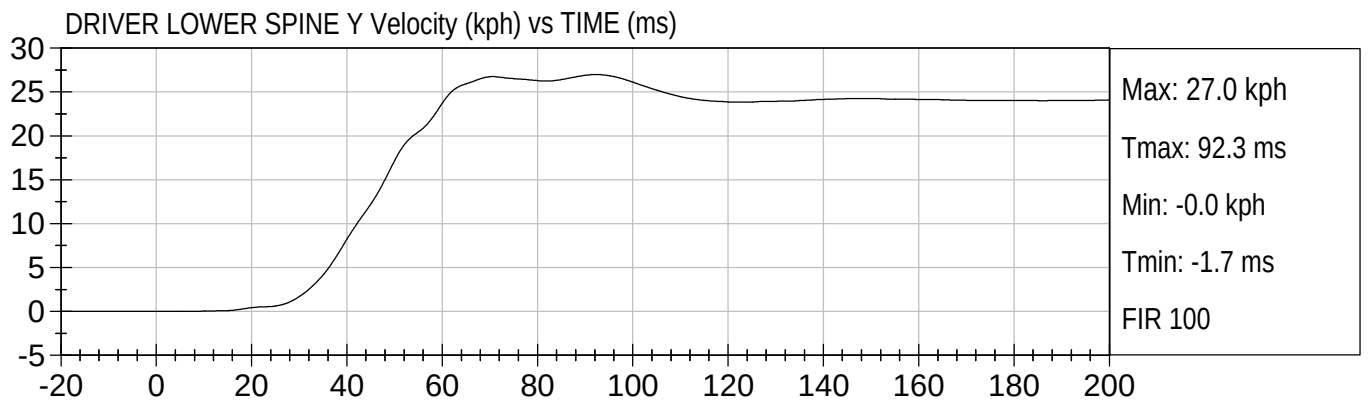
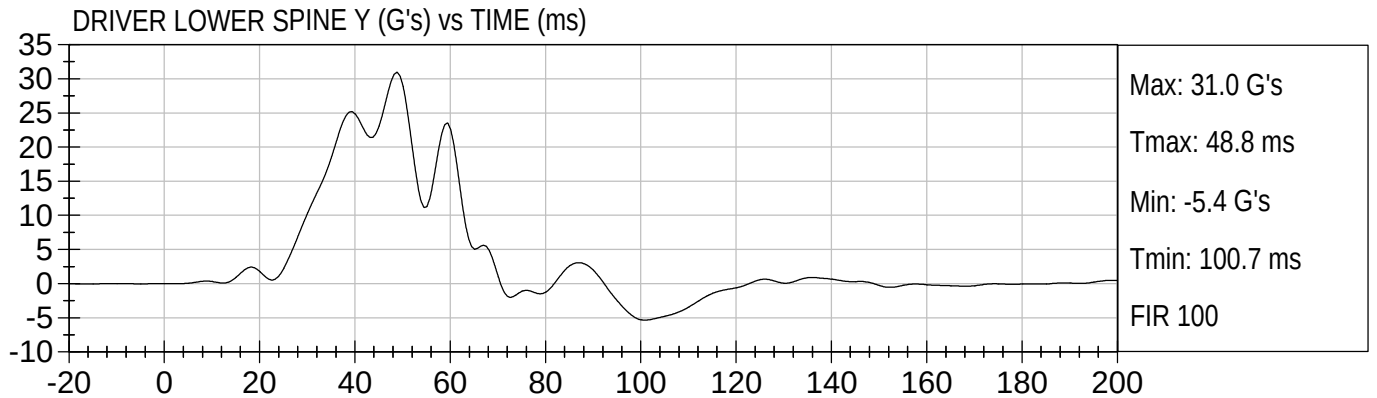


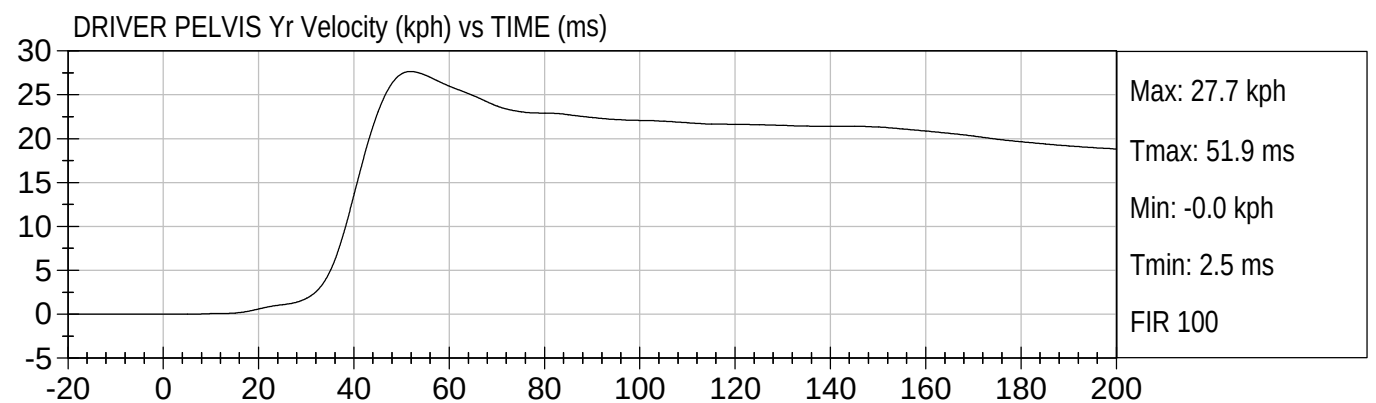
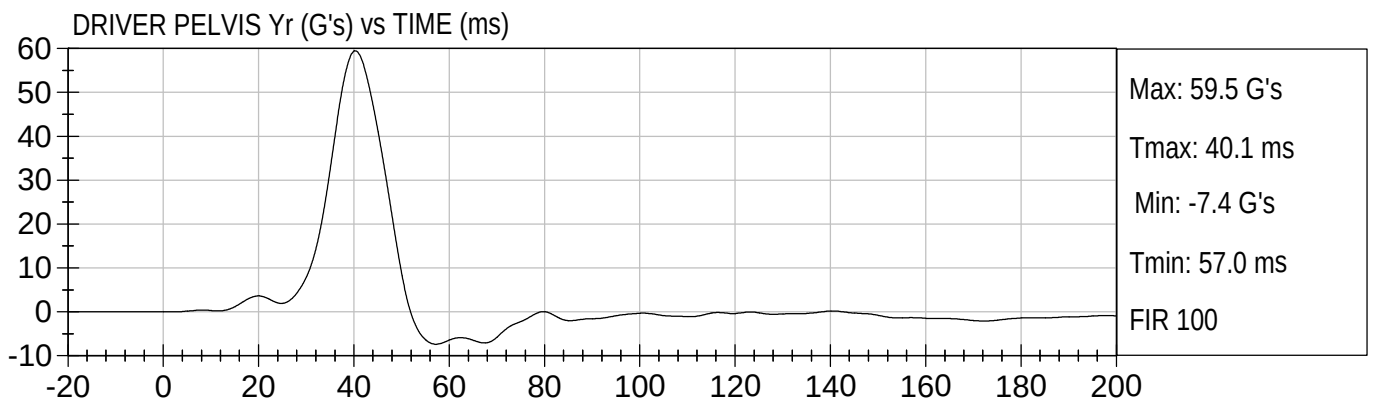
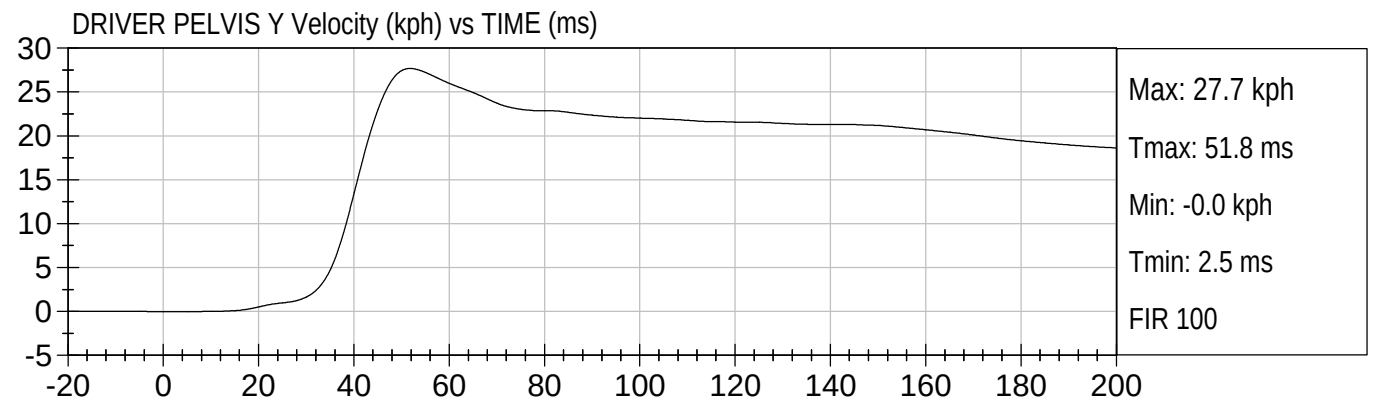
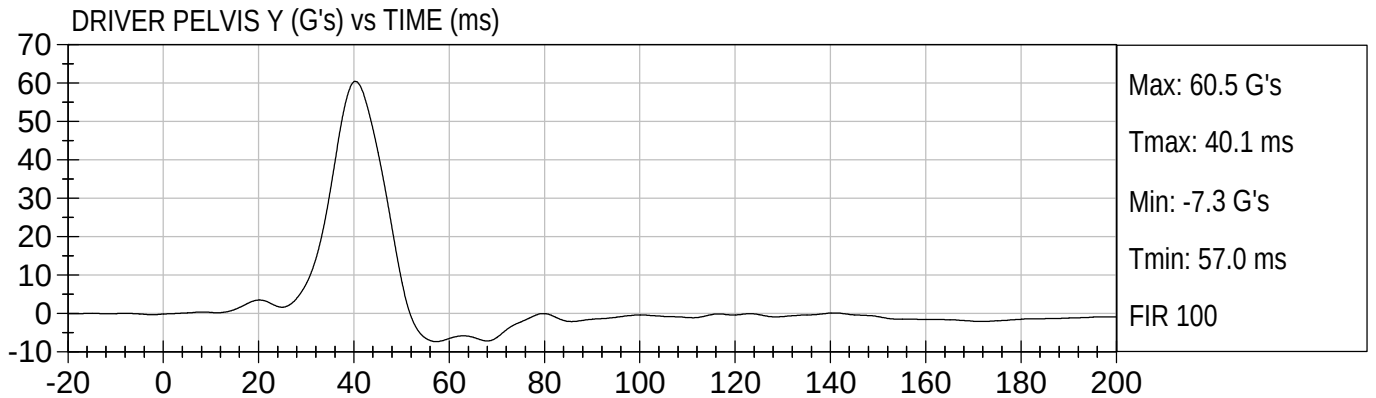






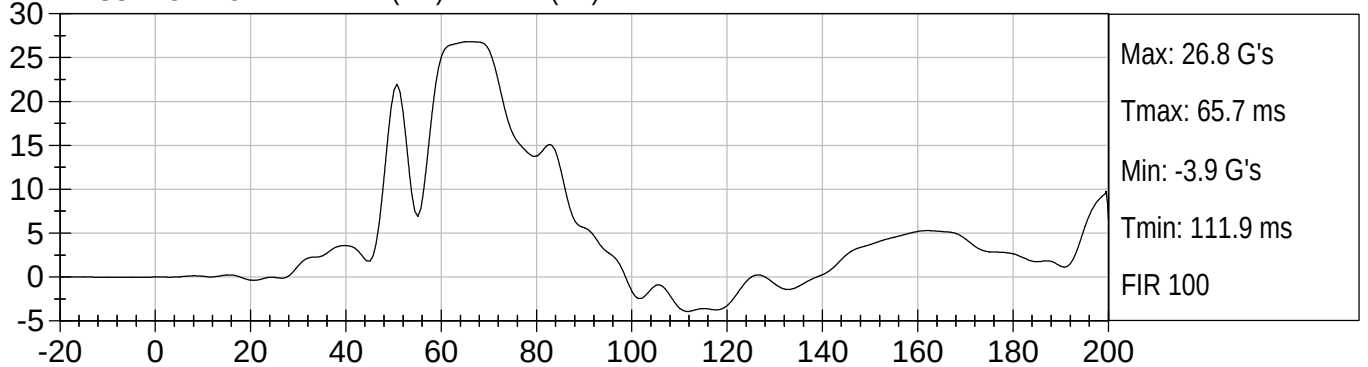




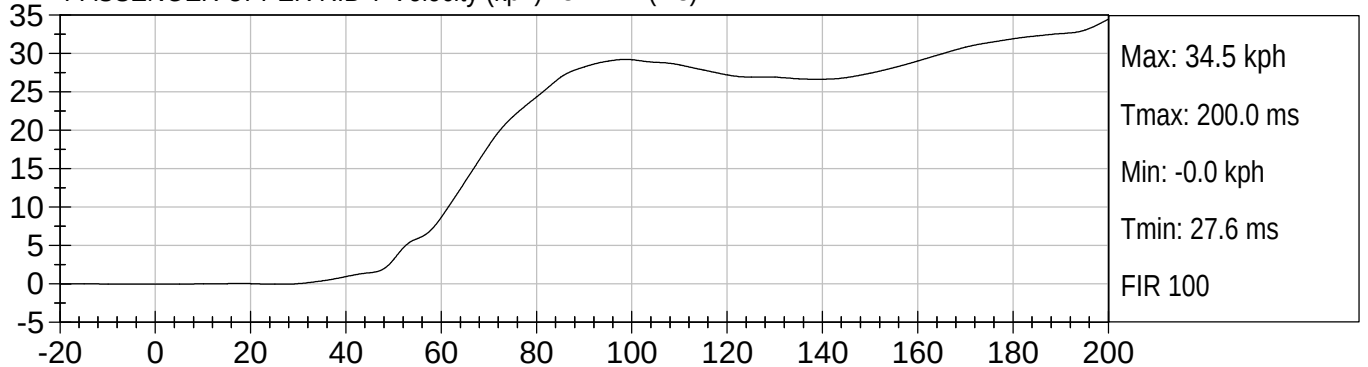




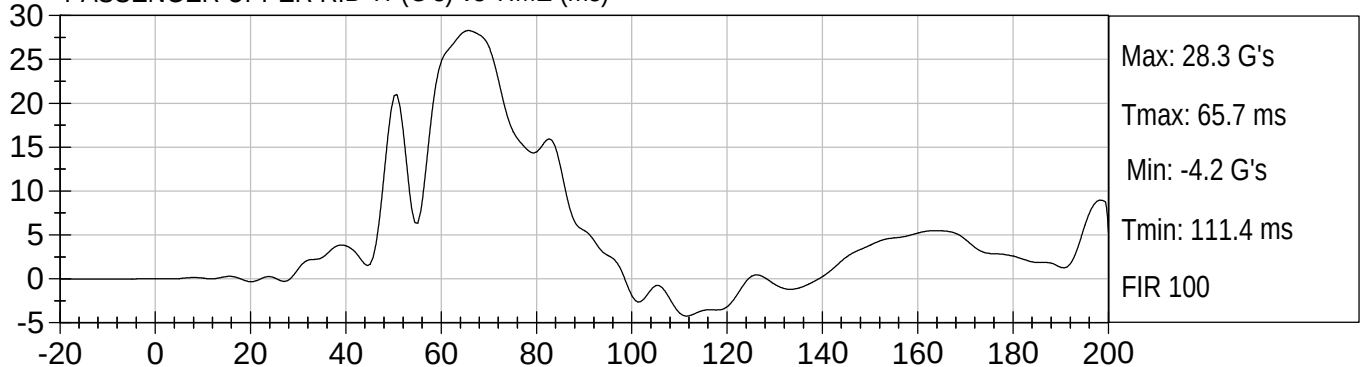
PASSENGER UPPER RIB Y (G's) vs TIME (ms)



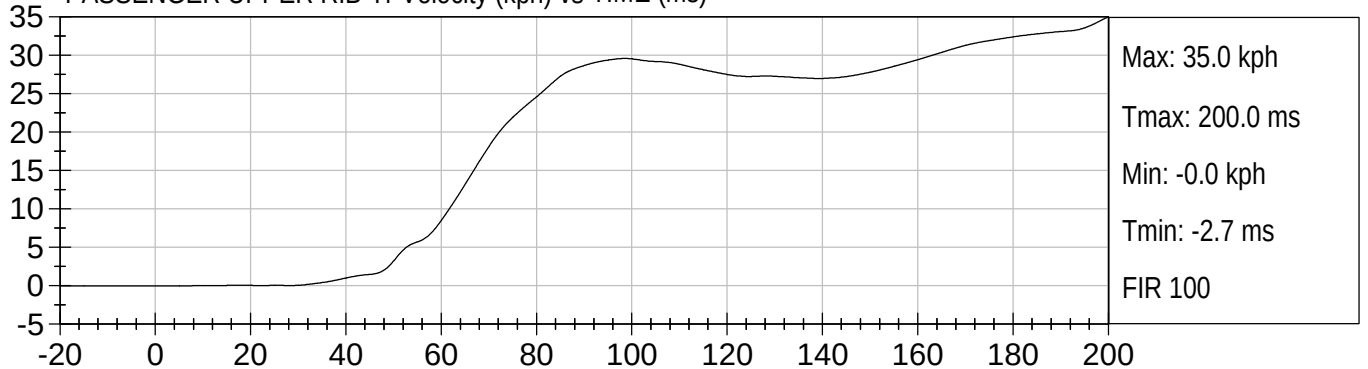
PASSENGER UPPER RIB Y Velocity (kph) vs TIME (ms)

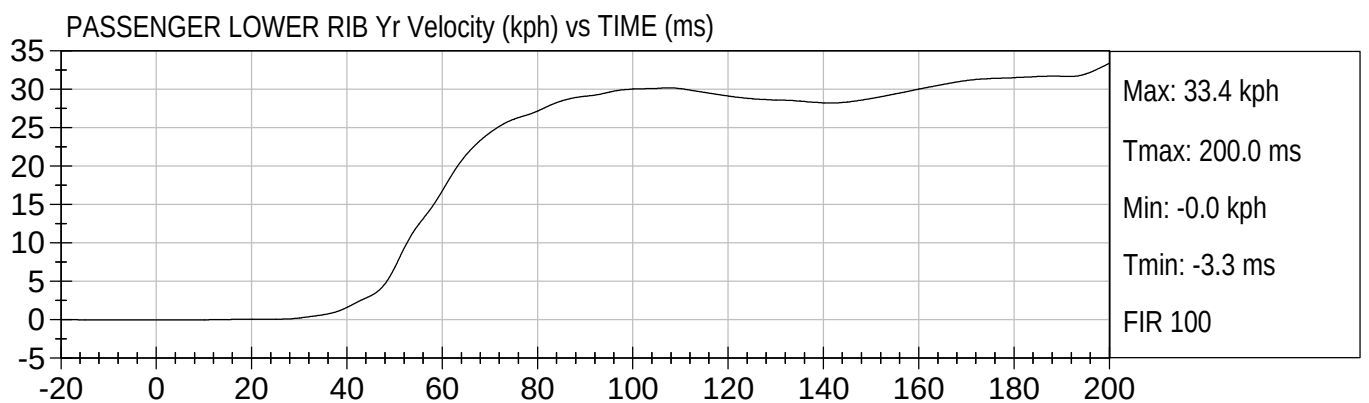
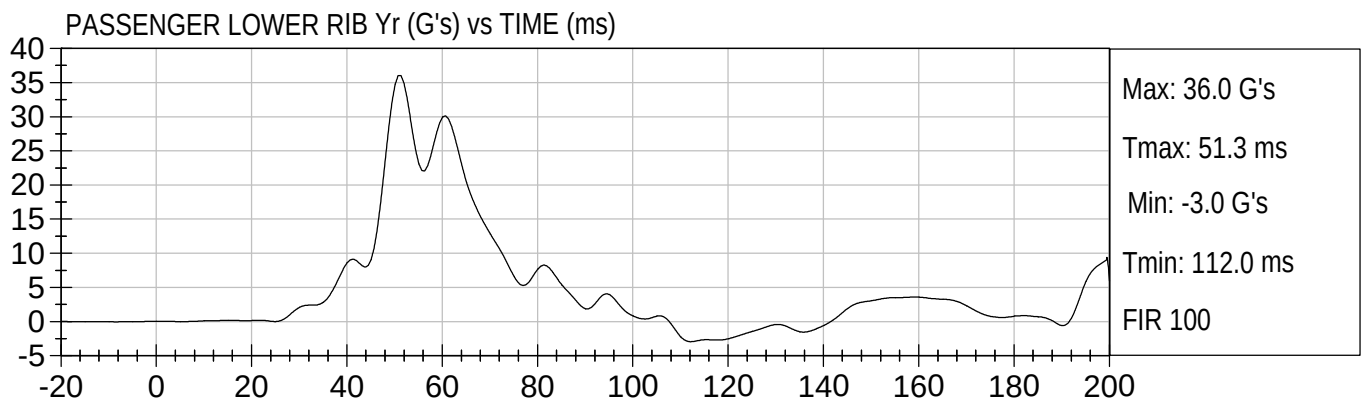
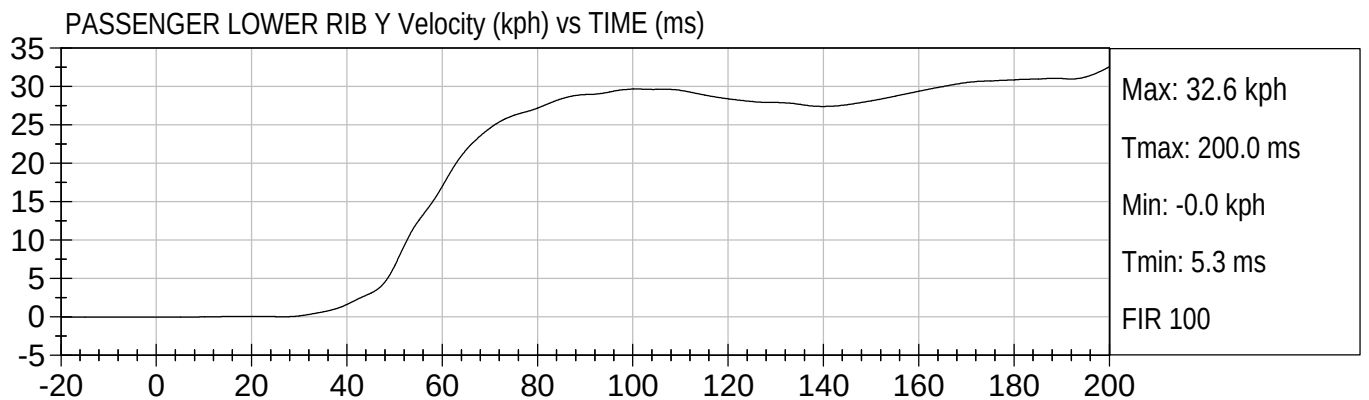
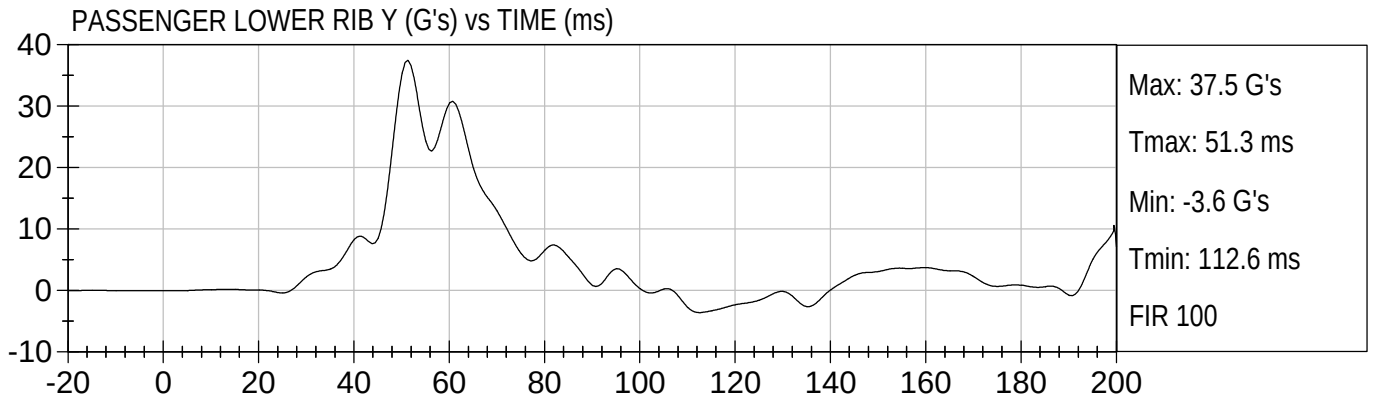


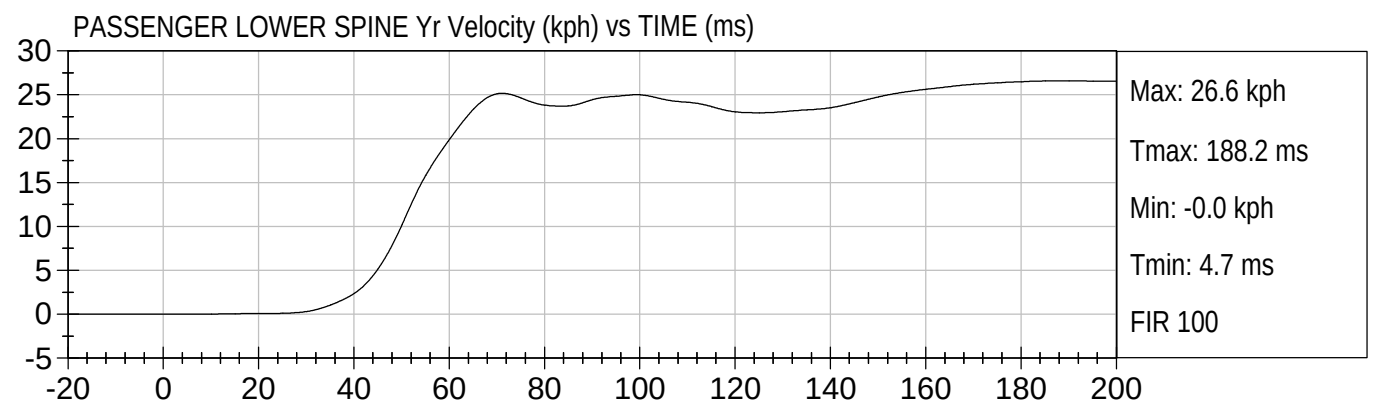
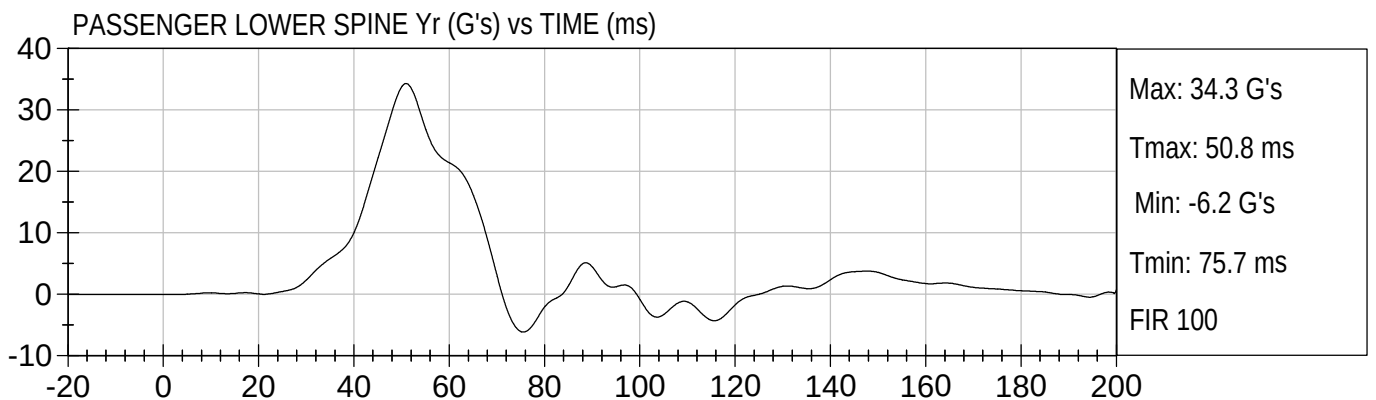
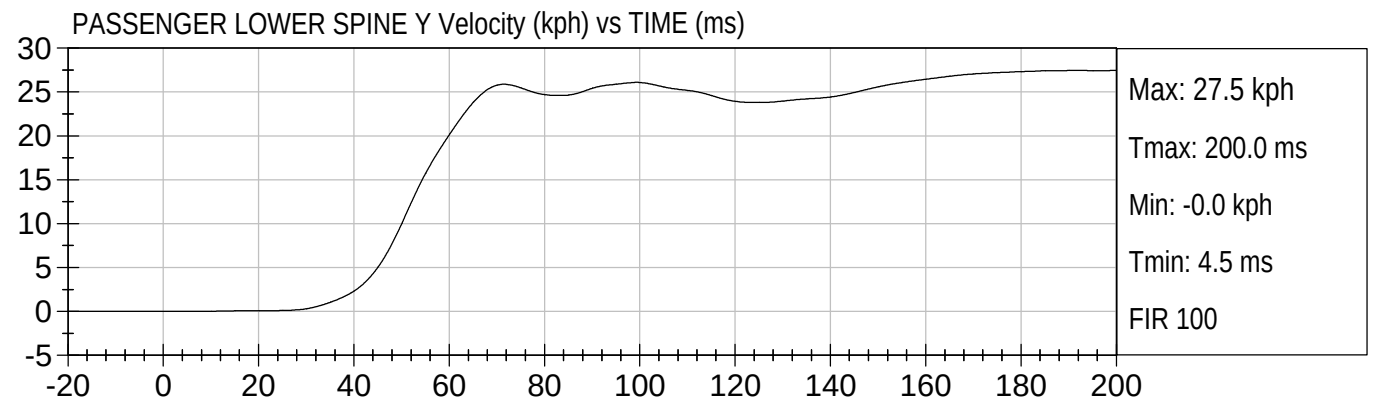
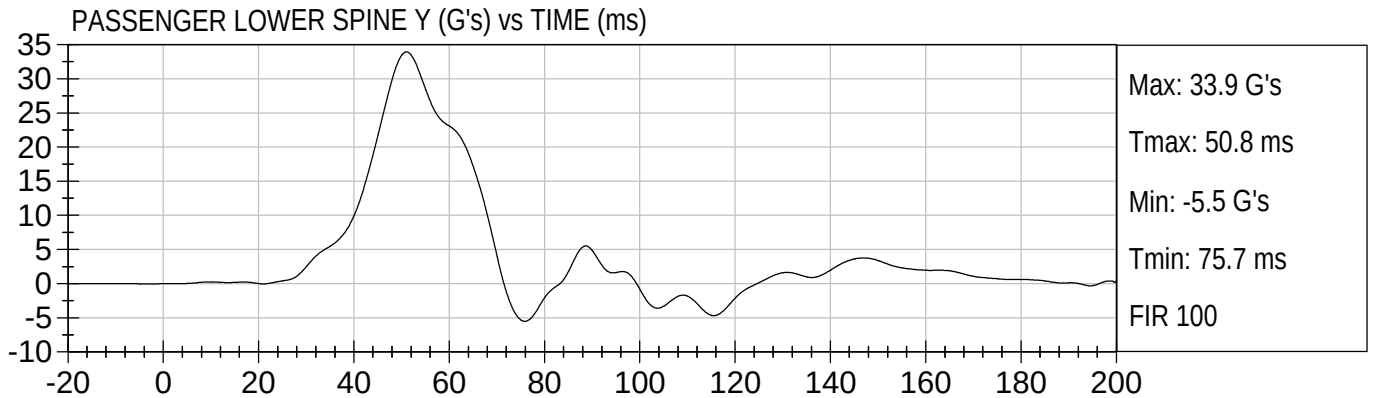
PASSENGER UPPER RIB Yr (G's) vs TIME (ms)

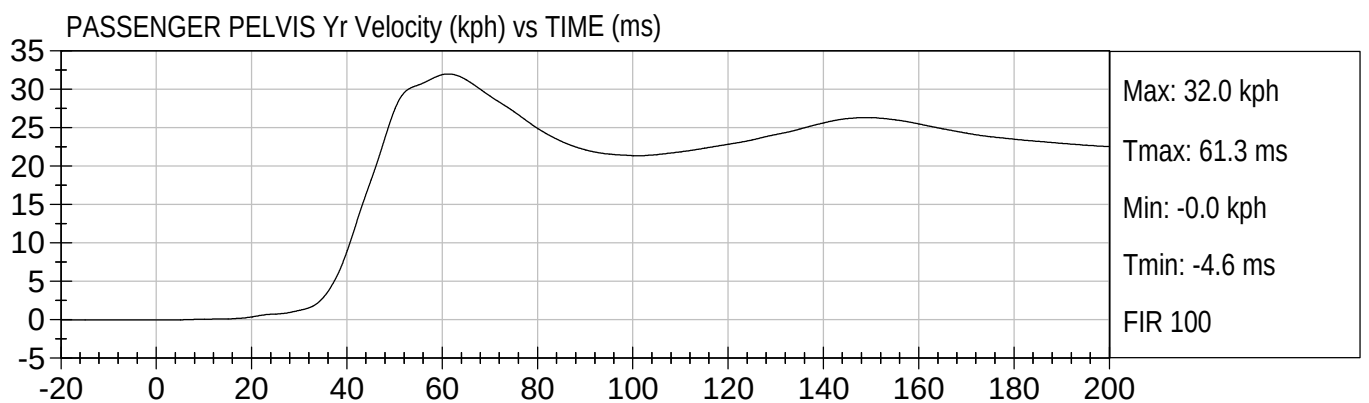
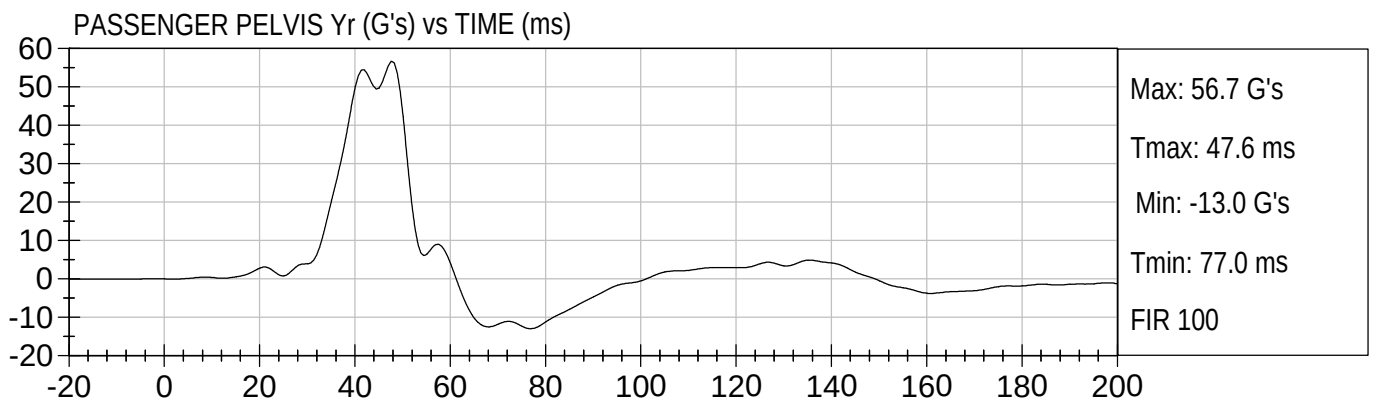
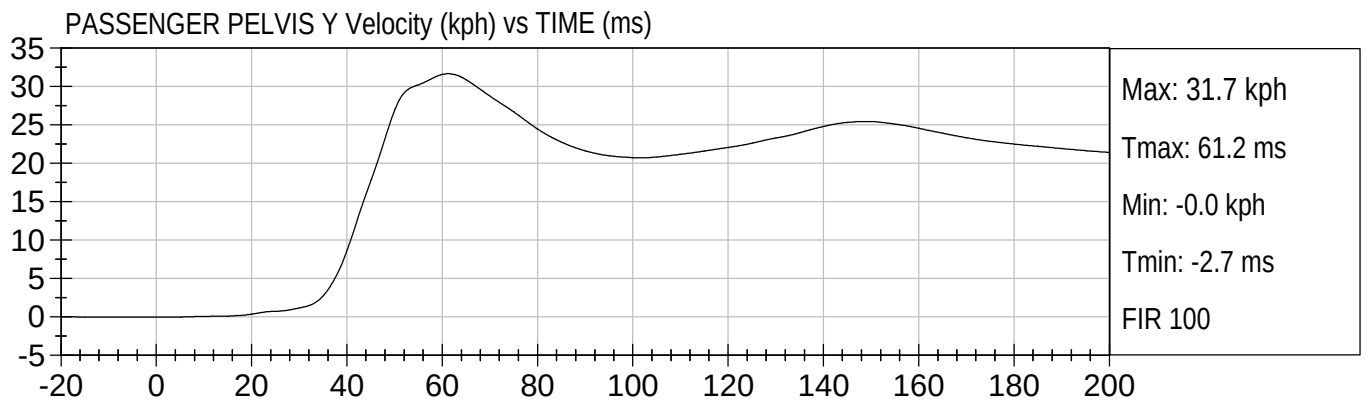
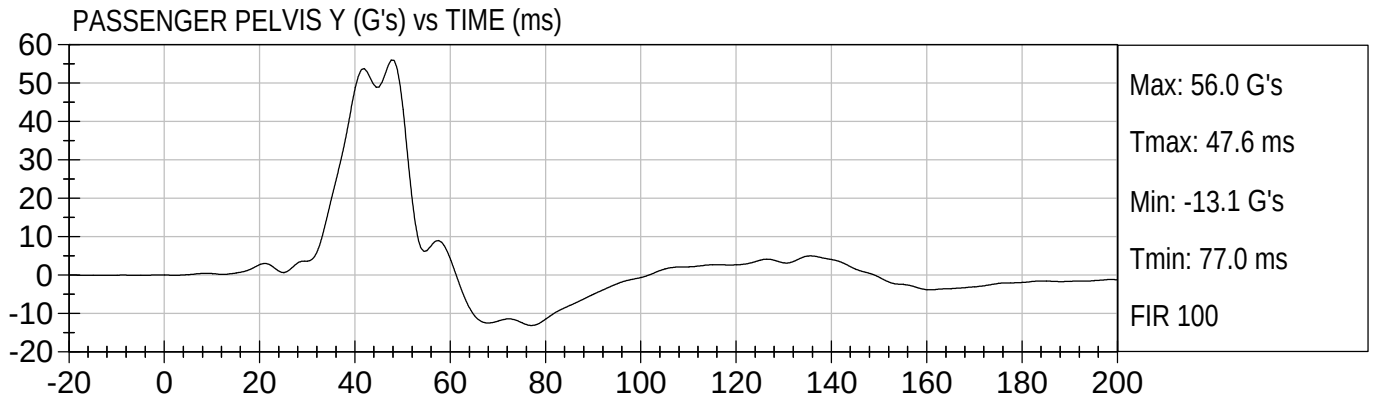


PASSENGER UPPER RIB Yr Velocity (kph) vs TIME (ms)









APPENDIX C

SID CONFIGURATION AND PERFORMANCE VERIFICATION DATA

CERTIFICATION DATA

Dummy Serial Number: 036

Calibration Test Results Summary

Dummy Serial Number: 036

Pre-Test Calibration

Head Drop Test:	The head passed all drop test requirements.
Neck Pendulum Test:	The neck passed all impact test requirements.
Shoulder Impact Test:	The shoulder passed all impact test requirements.
Rib Tests:	All ribs passed all impact test requirements.
Abdomen Test:	The abdomen passed all impact test requirements.
Lumbar Spine Test:	The lumbar spine passed all impact test requirements.
Pelvis Test:	The pelvis passed all impact test requirements

SID Calibration Data Sheet
Side Impact Dummy
Configured to Left Side Impact

Technician: Tim Michnay

Tested Parameter	Units	Specification	Dummy Serial Number: 36		Dummy Serial Number: 37	
			Pre-Test	Post-Test	Pre-Test	Post-Test
SH – Seated Height	mm	889 - 909	903	903	902	902
RH – Rib Height	mm	501 – 521	506	506	509	509
HP – Hip Pivot Height	mm	99 ref.	99	99	99	99
RD-Rib from Back Line	mm	229 – 241	232	232	232	232
KV – Knee Pivot from Back Line	mm	511 – 526	518	518	519	519
SW – Knee Pivot to Floor	mm	490 – 505	497	497	493	493
HW – Hip Width	mm	356 – 391	370	370	378	378
Thorax Impact						
Laboratory Temperature	°C	18.9 to 25.5	22.0	22.0	22.0	22.2
Laboratory Relative Humidity	%	10 to 70	21	27	21	28
Probe Velocity	m/s	4.27 – 4.33	4.28	4.27	4.28	4.28
Upper Rib	G's	37 – 46	38	42	37	39
Lower Rib	G's	37 – 46	46	44	45	45
Lower Spine	G's	15 – 22	16	19	20	21
Pelvis Impact						
Laboratory Temperature	°C	18.9 to 25.5	22.0	21.7	22.0	22.0
Laboratory Relative Humidity	%	10 to 70	21	27	21	21
Probe Velocity	m/s	4.27 – 4.33	4.28	4.27	4.28	4.29
Pelvis	G's	40 - 60	46	42	46	48

SID Calibration Data Sheet
Side Impact Dummy
External Measurements

ATD Serial No.: 36

Test Number: D0200

Tested Parameter	Units	Specification	Result	Pass/Fail
SH – Seated Height	mm	889 – 909	903	Pass
RH – Rib Height	mm	501 – 521	506	Pass
HP – Hip Pivot Height	mm	99 ref.	99	Pass
RD-Rib from Back Line	mm	229 - 241	232	Pass
KV – Knee Pivot from Back Line	mm	511 – 526	518	Pass
SW – Knee Pivot to Floor	mm	490 – 505	497	Pass
HW – Hip Width	mm	356 – 391	370	Pass
Overall Test Results				Pass

Laboratory Technician

1/4/02
Test Date

Approved By

SID Calibration Data Sheet
Side Impact Dummy
Head Drop Calibration

ATD Serial No.: 36

Test I.D.: D0200

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	20	Pass
Peak Resultant Acceleration	G's	210 to 260	250	Pass
Peak Lateral Acceleration	G's	< 10	-8	Pass
Time Above 100 G	msec	0.9 – 1.5	1.1	Pass
Overall Test Results				Pass

Laboratory Technician

1/4/02
Test Date

Approved By

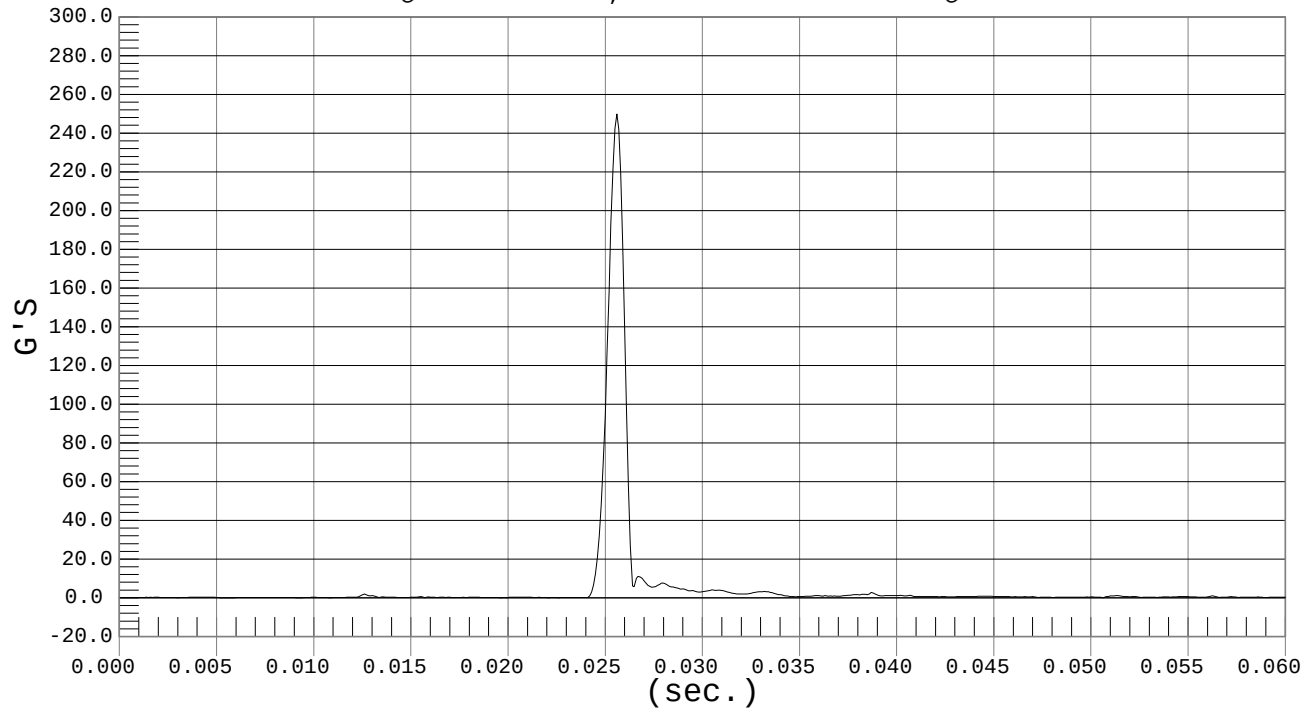


PEAK RESULTANT ACCELERATION

Test Desc.: Head Drop
Component: Dummy #036

Test Date: 01-04-02
Speed: 0.0 fps, 0.00 M/s

Ymin = .04 G'S @ 0.0029 sec., Ymax = 249.8 G'S @ 0.0255 sec.

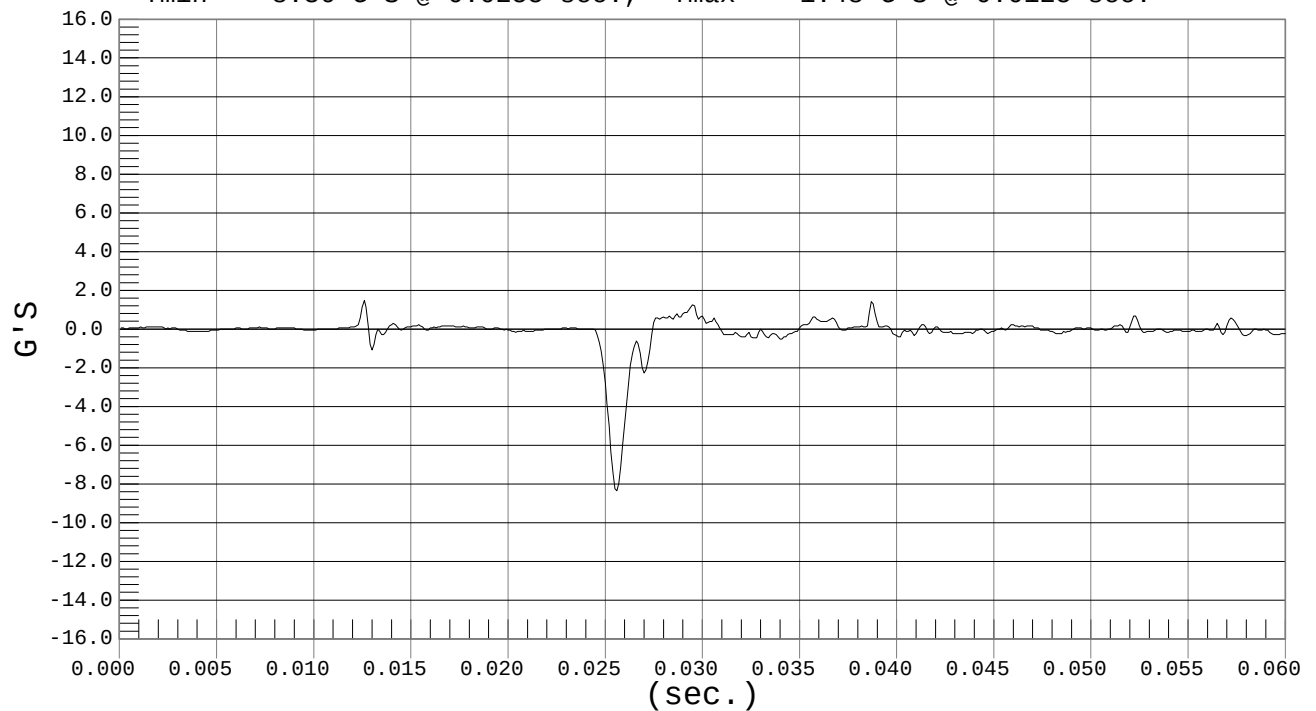


PEAK LATERAL ACCELARATION

Test Desc.: Head Drop
Component: Dummy #036

Test Date: 01-04-02
Speed: 0.0 fps, 0.00 M/s

Ymin = -8.36 G'S @ 0.0255 sec., Ymax = 1.48 G'S @ 0.0125 sec.



SID Calibration Data Sheet
Side Impact Dummy
Thoracic Shock Absorber Calibration

ATD Serial No.: 36

Test I.D.: D02006/7/8

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	18.9-25.5	21.3	Pass
Laboratory Relative Humidity		%	10 to 70	15	Pass
Velocity 3.05 m/s	Force	N	836-1125	960	Pass
	Displacement	mm	30-35	33	Pass
Velocity 4.27 m/s	Force	N	1730-2099	1891	Pass
	Displacement	mm	32-37	36	Pass
Velocity 6.1 m/s	Force	N	3741-4448	4397	Pass
	Displacement	mm	33-40	38	Pass
Overall Test Results				Pass	

Laboratory Technician

1/7/02
Test Date

Approved By

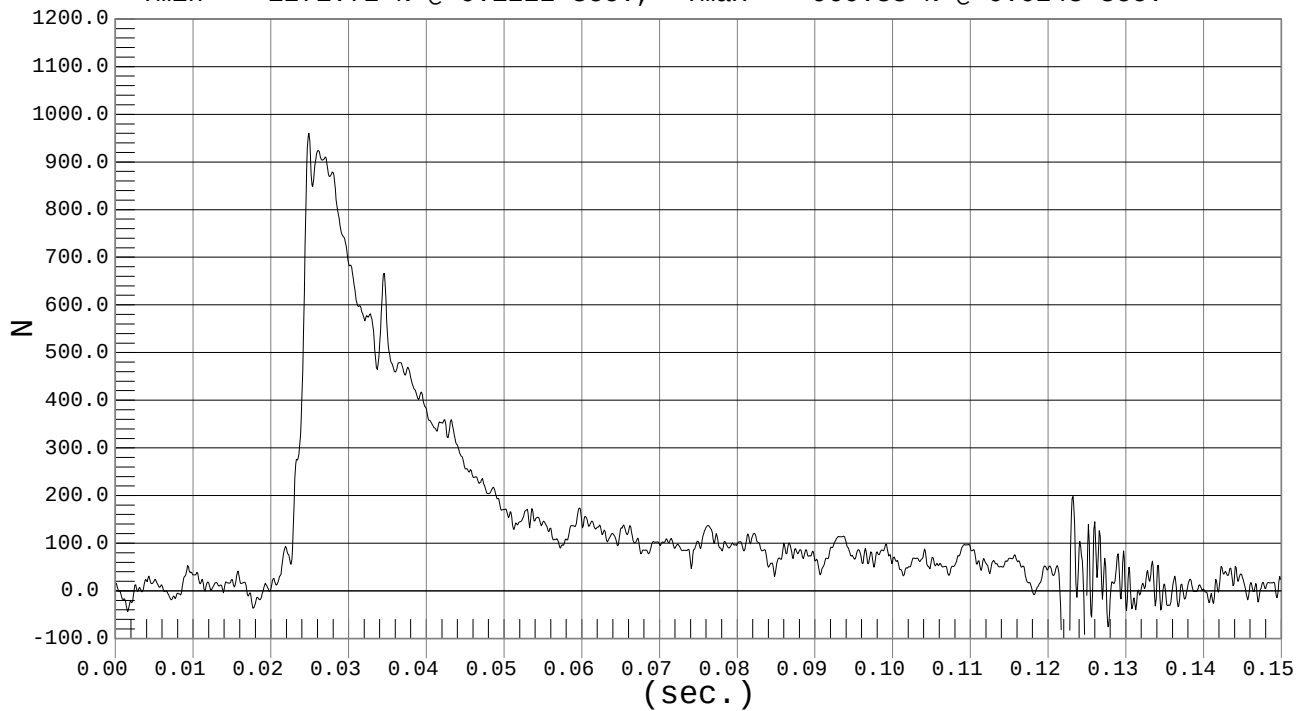


PEAK FORCE

Test Desc.: Dampener Impact
Component: Dummy #036

Test Date: 01-07-02
Speed: 10.0 fps, 3.05 M/s

Ymin = -1271.72 N @ 0.1222 sec., Ymax = 960.33 N @ 0.0248 sec.

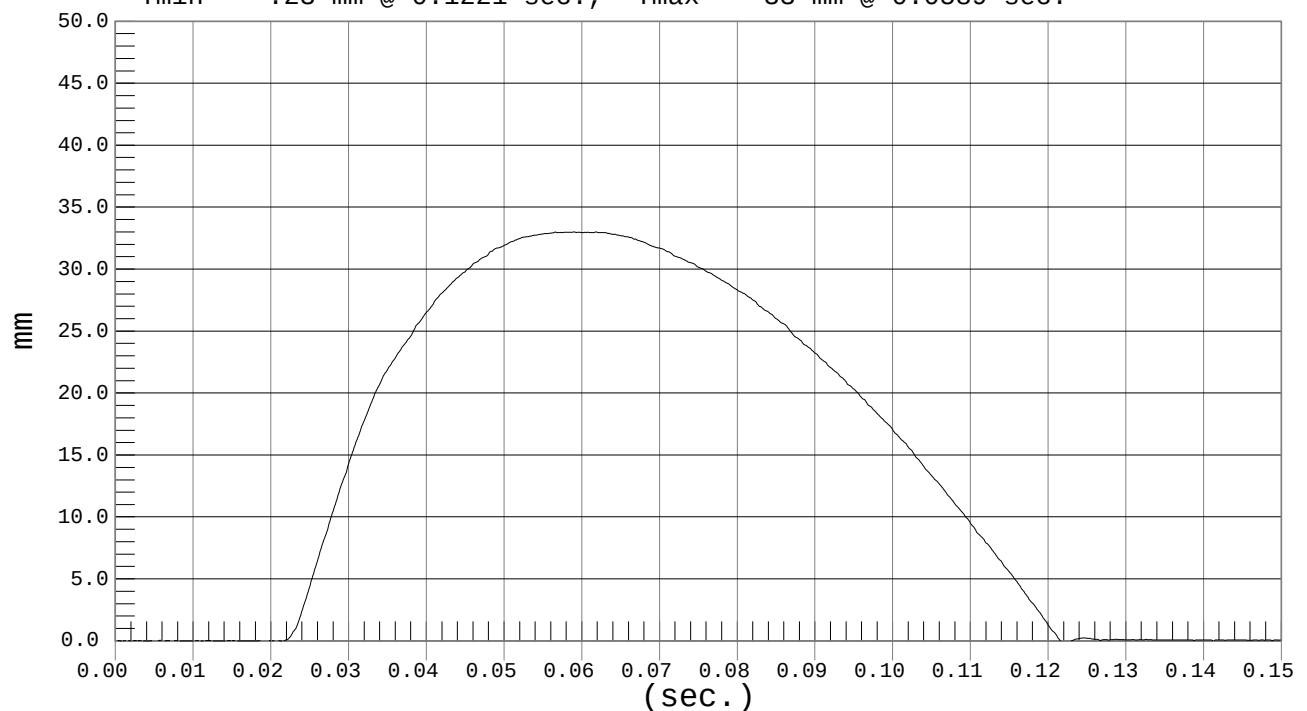


PEAK DISPLACEMENT

Test Desc.: Dampener Impact
Component: Dummy #036

Test Date: 01-07-02
Speed: 10.0 fps, 3.05 M/s

Ymin = -.23 mm @ 0.1221 sec., Ymax = 33 mm @ 0.0589 sec.



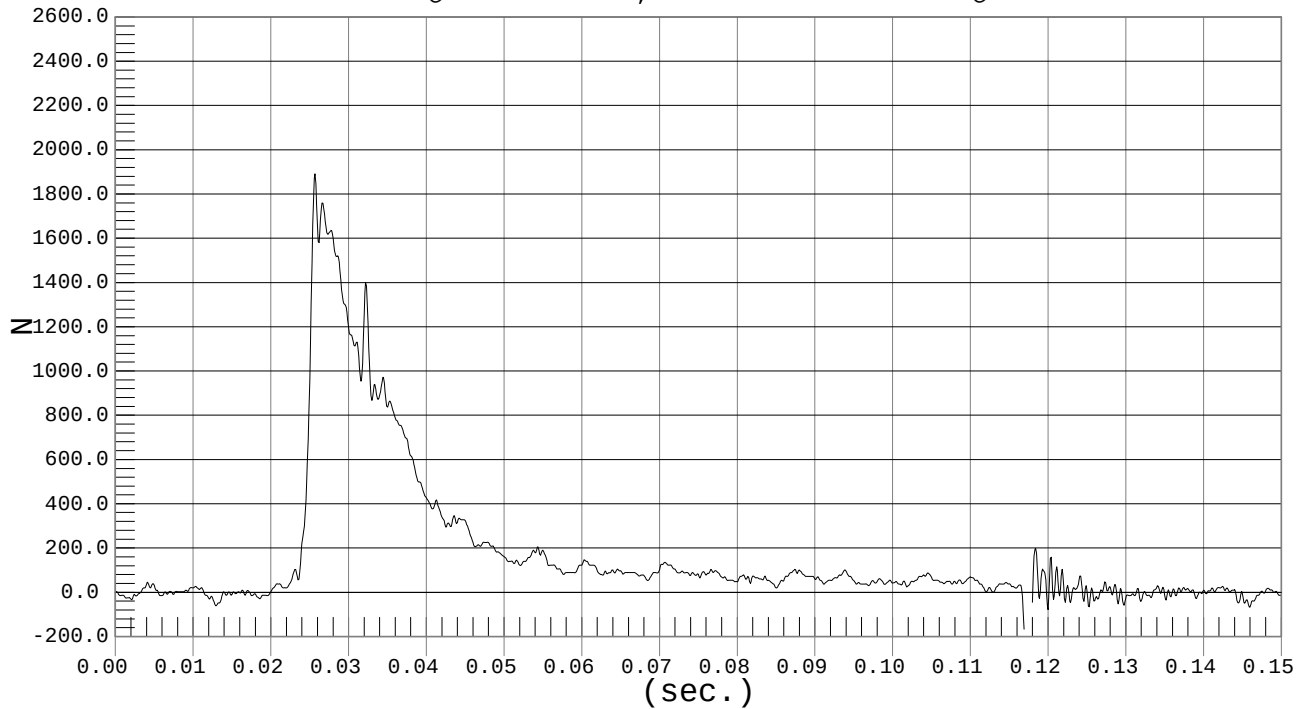


Test Desc.: Dampener Impact
Component: Dummy #036

PEAK FORCE

Test Date: 01-07-02
Speed: 14.0 fps, 4.27 M/s

Ymin = -1285.96 N @ 0.1174 sec., Ymax = 1890.72 N @ 0.0256 sec.

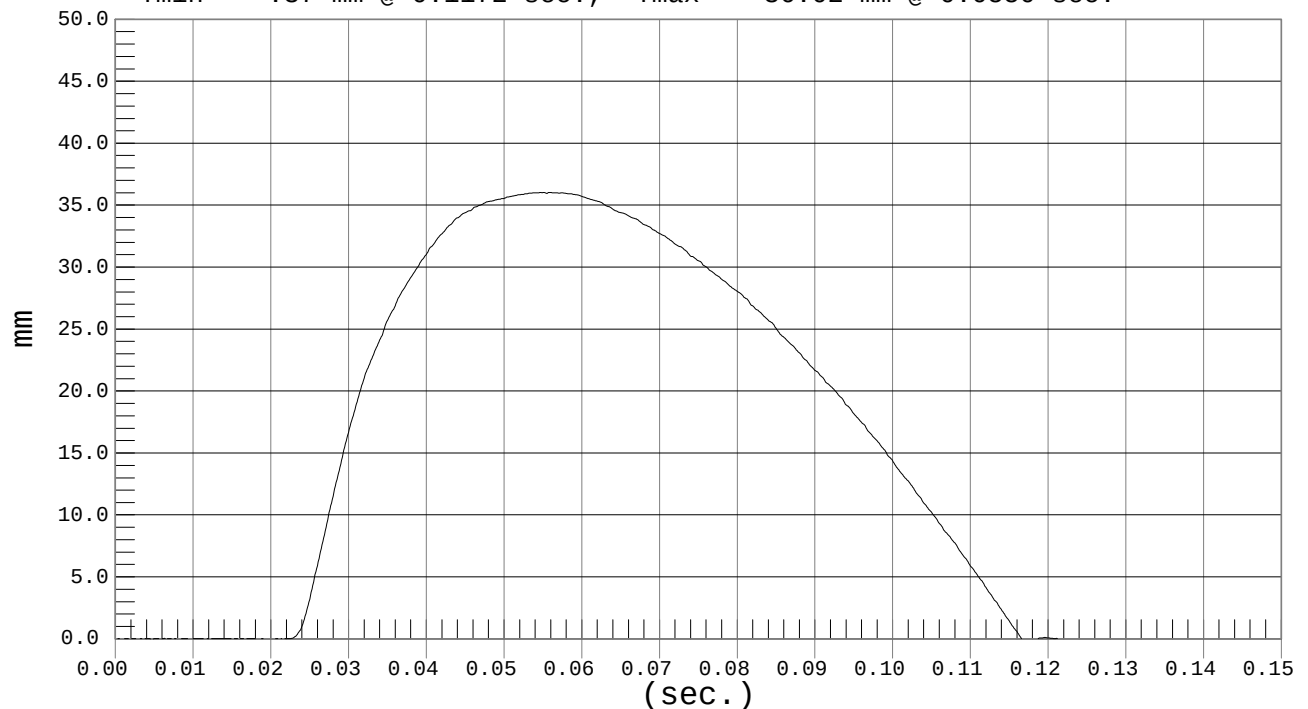


Test Desc.: Dampener Impact
Component: Dummy #036

PEAK DISPLACEMENT

Test Date: 01-07-02
Speed: 14.0 fps, 4.27 M/s

Ymin = -.37 mm @ 0.1172 sec., Ymax = 36.02 mm @ 0.0550 sec.



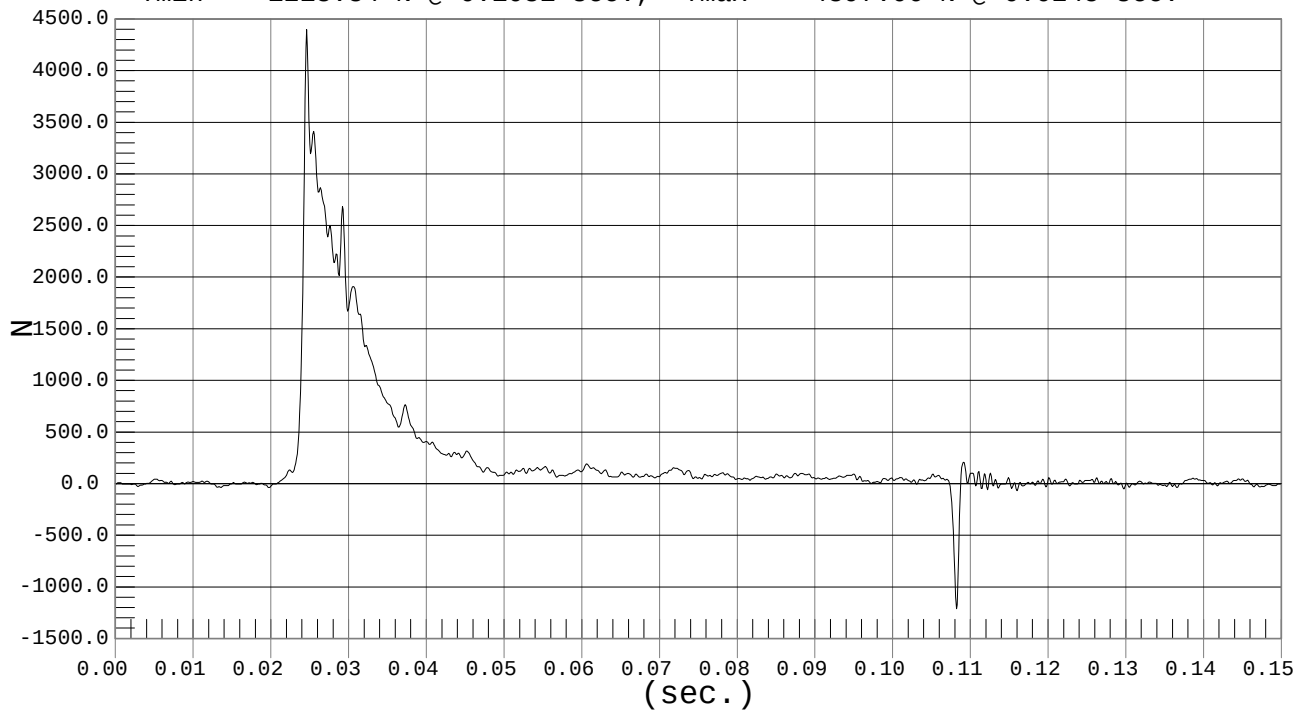


PEAK FORCE

Test Desc.: Dampener Impact
Component: Dummy #036

Test Date: 01-07-02
Speed: 20.0 fps, 6.10 M/s

Ymin = -1213.84 N @ 0.1081 sec., Ymax = 4397.06 N @ 0.0245 sec.

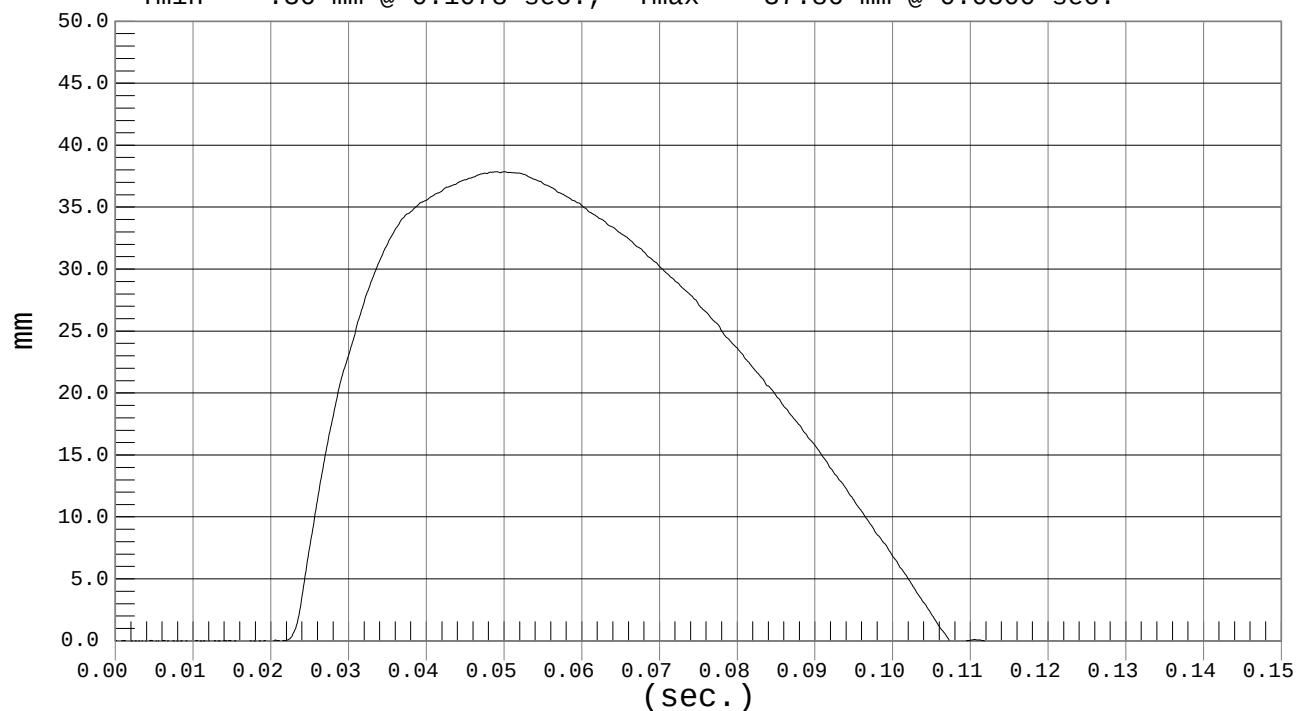


PEAK DISPLACEMENT

Test Desc.: Dampener Impact
Component: Dummy #036

Test Date: 01-07-02
Speed: 20.0 fps, 6.10 M/s

Ymin = -.36 mm @ 0.1078 sec., Ymax = 37.86 mm @ 0.0500 sec.



SID Calibration Data Sheet
Side Impact Dummy
Thorax Impact Calibration

ATD Serial No.:36

Test I.D.:D02002

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	22.0	Pass
Laboratory Relative Humidity	%	10 to 70	21	Pass
Probe Velocity	m/s	4.27 – 4.33	4.28	Pass
Upper Rib	G's	37 – 46	38	Pass
Lower Rib	G's	37 – 46	46	Pass
Lower Spine	G's	15 - 22	16	Pass
Overall Test Results				Pass

Laboratory Technician

1/8/02
Test Date

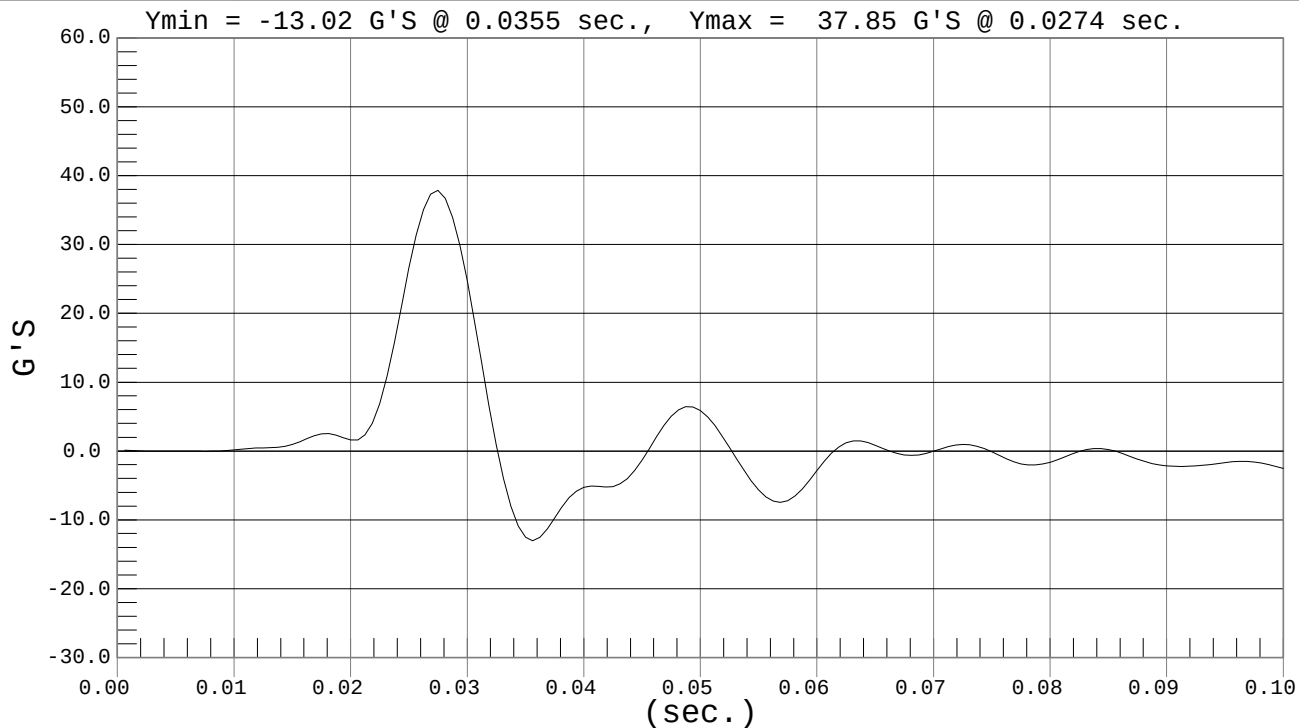
Approved By



LOWER RIB ACCELERATION

Test Desc.: Thorax Impact
Component: Dummy #036

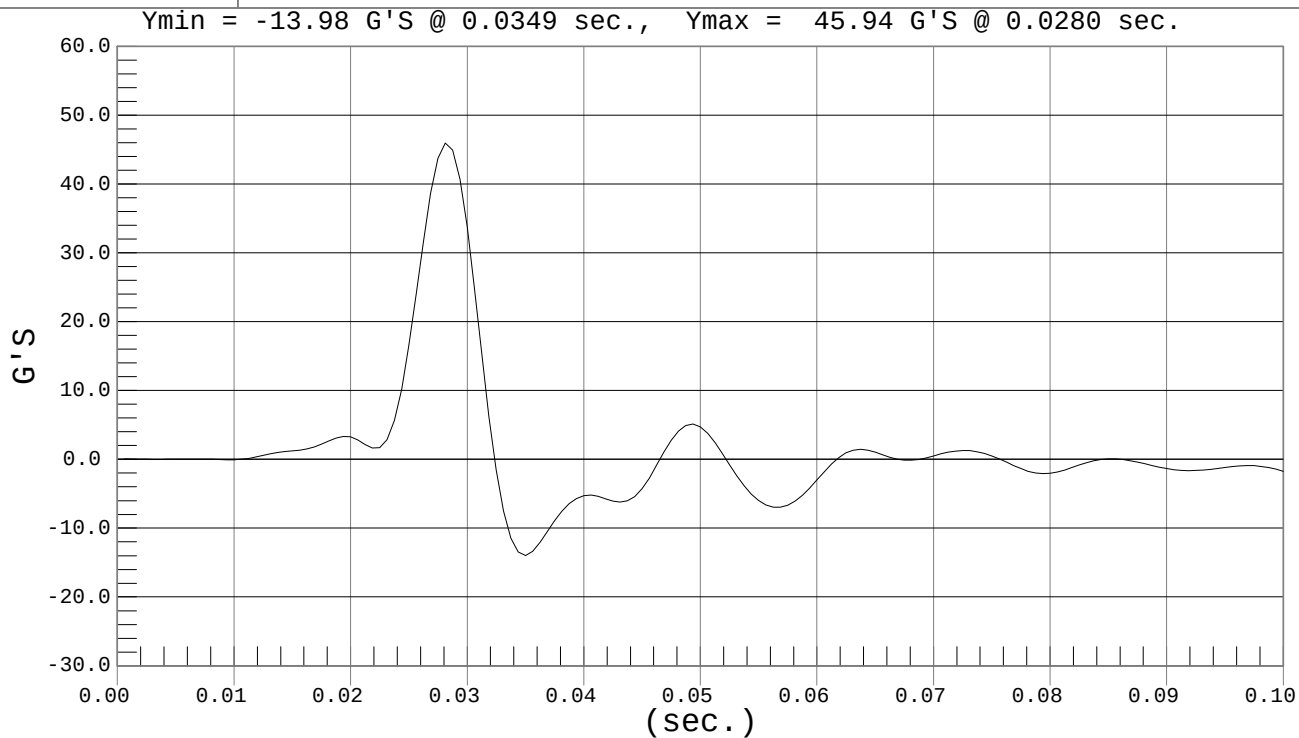
Test Date: 01-08-02
Speed: 14.0 fps, 4.28 M/s



LOWER RIB ACCELERATION

Test Desc.: Thorax Impact
Component: Dummy #036

Test Date: 01-08-02
Speed: 14.0 fps, 4.28 M/s



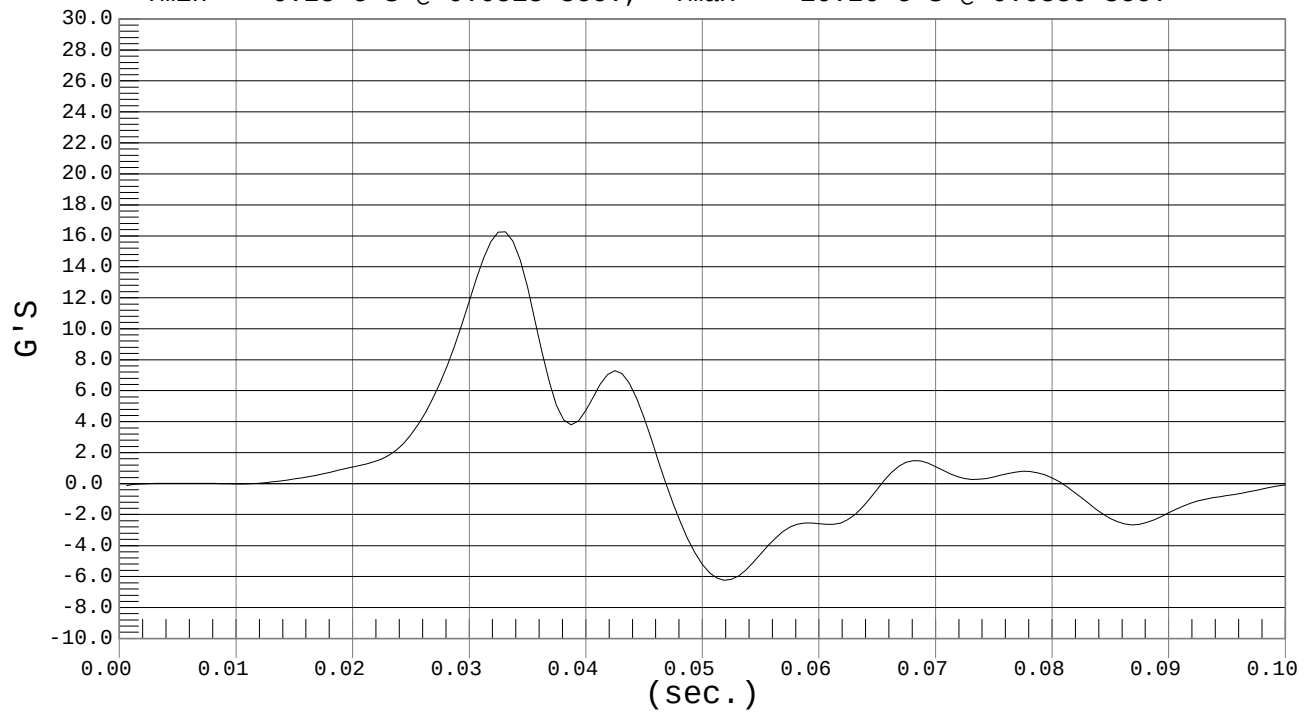


LOWER SPINE ACCELERATION

Test Desc.: Thorax Impact
Component: Dummy #036

Test Date: 01-08-02
Speed: 14.0 fps, 4.28 M/s

Ymin = -6.25 G'S @ 0.0518 sec., Ymax = 16.26 G'S @ 0.0330 sec.



SID Calibration Data Sheet
Side Impact Dummy
Pelvis Impact Calibration

ATD Serial No.:36

Test I.D.:D02003

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	22.0	Pass
Laboratory Relative Humidity	%	10 to 70	21	Pass
Probe Speed	m/s	4.27 – 4.33	4.28	Pass
Pelvis Acceleration	G's	40 - 60	46	Pass
Overall Test Results			Pass	

Laboratory Technician

1/8/02
Test Date

Approved By

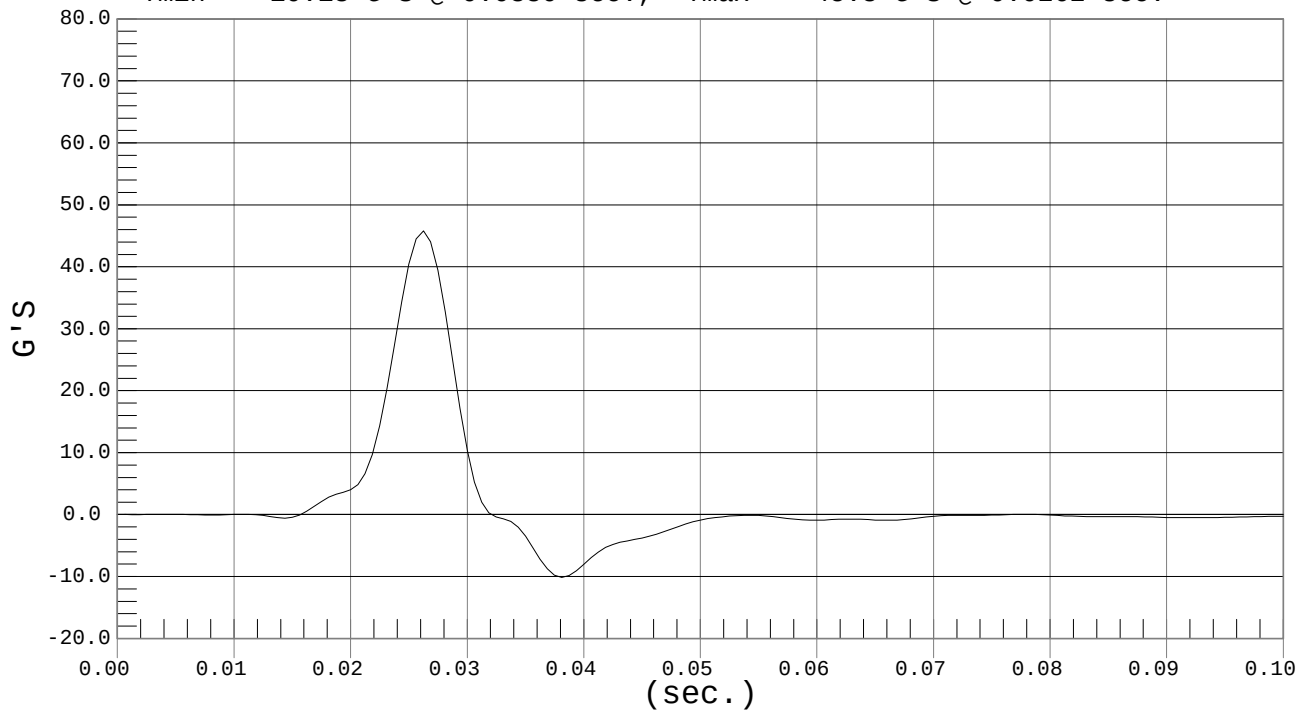


PELVIS ACCELERATION

Test Desc.: Pelvis Impact
Component: Dummy #036

Test Date: 01-08-02
Speed: 14.0 fps, 4.28 M/s

Ymin = -10.13 G'S @ 0.0380 sec., Ymax = 45.8 G'S @ 0.0262 sec.



SID Calibration Data Sheet
Side Impact Dummy
Abdominal Compression Calibration (Preload = 10 lbs)

ATD Serial No.: 36

Test I.D.: D02004

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	15	Pass
Force @ 12.7	mm	104 – 162	134	Pass
Force @ 19	mm	163 – 222	189	Pass
Force @ 25.4	mm	222 – 280	254	Pass
Force @ 33	mm	325 - 391	359	Pass
Overall Test Results				Pass

Laboratory Technician

1/7/02
Test Date

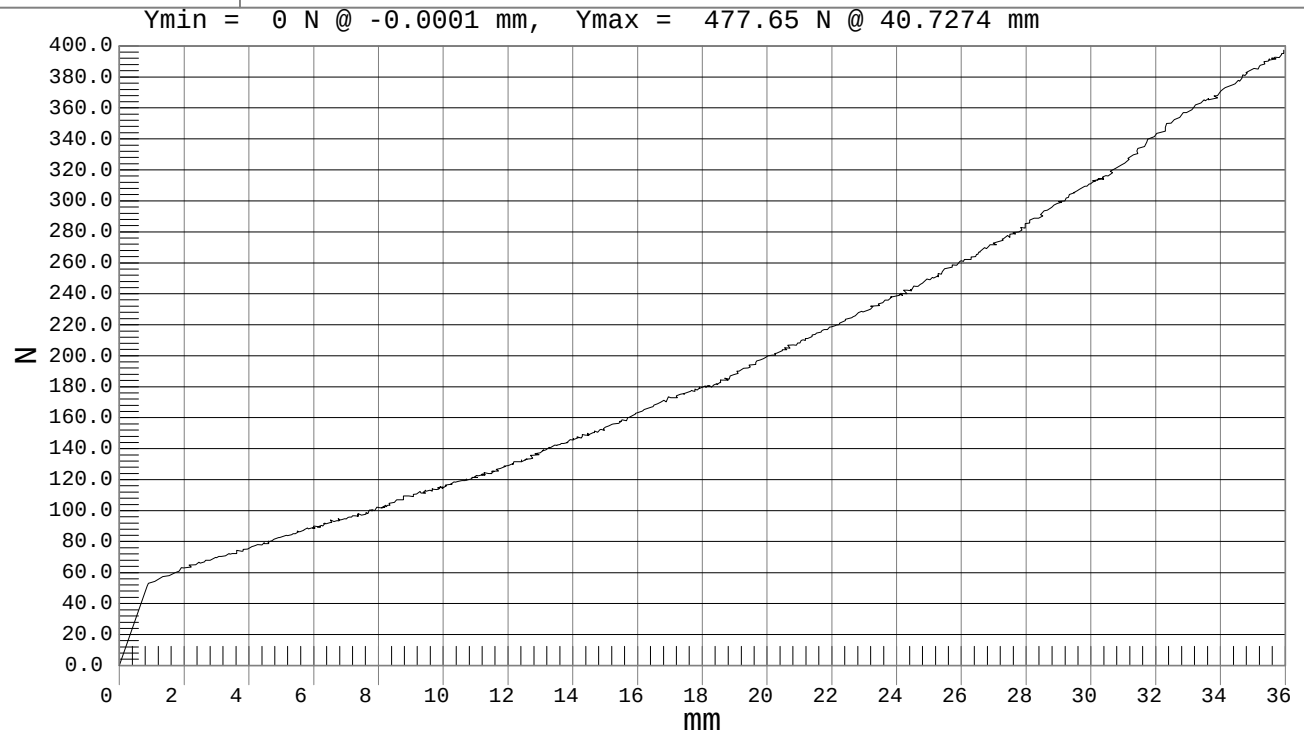
Approved By



ABDOMEN COMPRESSION

Test Desc.: Pelvis Impact
Component: Dummy #036

Test Date: 01-07-02
Speed: 0.0 fps, 0.00 M/s



SID Calibration Data Sheet
Side Impact Dummy
Lumbar Flexion Calibration

ATD Serial No.: 36

Test I.D.: D02005

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	19	Pass
Force @ 0	mm	0 – 26.7	0	Pass
Force @ 20	mm	97.9 – 151.2	132.2	Pass
Force @ 30	mm	151.2 – 204.6	181.6	Pass
Force @ 40	mm	204.6 – 258.0	251.5	Pass
Return Angle	Degrees	12 Maximum	6	Pass
Overall Test Results				Pass

Laboratory Technician

1/4/02
Test Date

Approved By

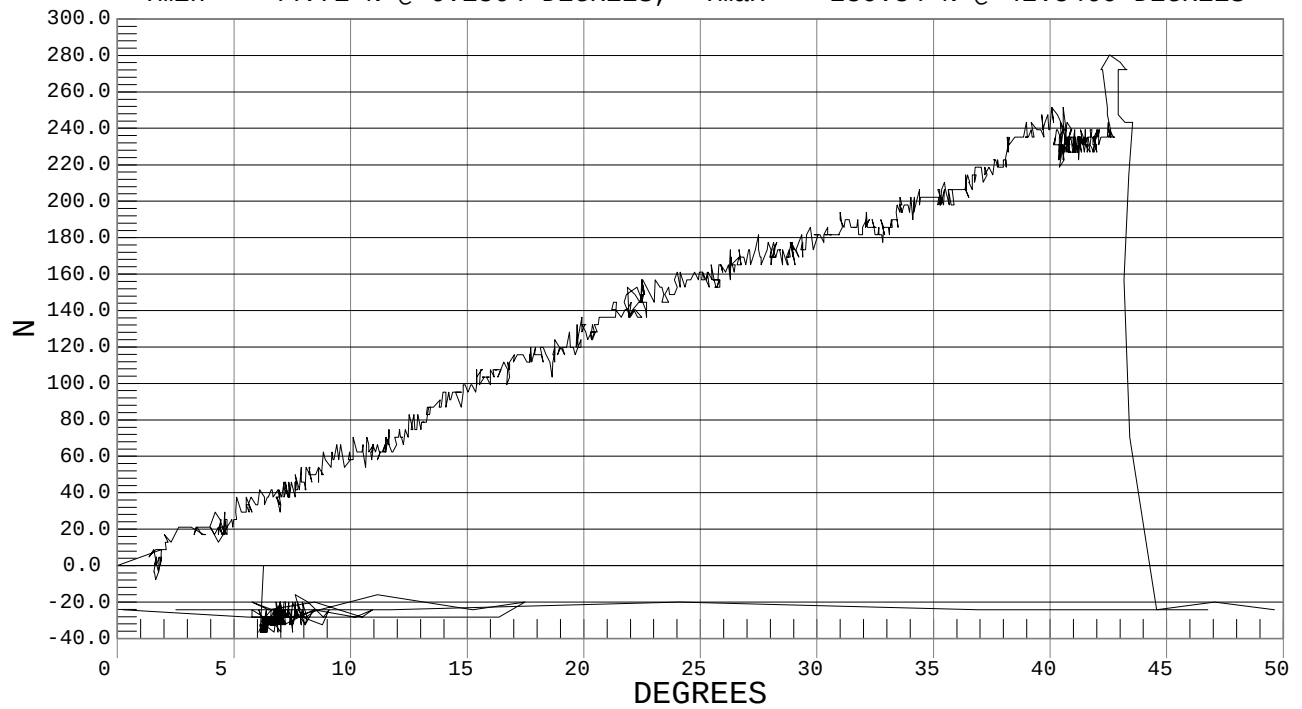


LUMBAR FLEXION

Test Desc.: LUMBAR FLEXION
Component: DUMMY # 036

Test Date: 01-04-02
Speed: 0.0 fps, 0.00 M/s

Ymin = -44.71 N @ 6.1864 DEGREES, Ymax = 280.34 N @ 42.5460 DEGREES



SID Calibration Data Sheet
Side Impact Dummy
Inspection Checklist

ATD Serial No.: 36

Test Part	Items Checked	Result
Skin	Visual inspection	OK
Head	Visual, ballast, accelerometer mount	OK
Neck	Visual	OK
Spine Box	Visual, ballast, weldment, accelerometer mount	OK
Rib Cage	Visual, measure	OK
Sternum	Visual	OK
Lumbar Spine	Visual	OK
Abdomen	Visual	OK
Pelvis	Visual, palpate, accelerometer mount	OK
Upper Legs	Visual	OK
Knees	Visual	OK
Lower Legs	Visual, range of motion	OK
Ankles	Visual, range of motion	OK
Feet	Visual, range of motion	OK
Joints	1 to 2 g range	OK
Other		OK

Notes (include component/problem/section/reason):

Laboratory Technician

1/8/02
Test Date

Approved By

CERTIFICATION DATA

Dummy Serial Number: 037

Calibration Test Results Summary

Dummy Serial Number: 037

Pre-Test Calibration

Head Drop Test:	The head passed all drop test requirements.
Neck Pendulum Test:	The neck passed all impact test requirements.
Shoulder Impact Test:	The shoulder passed all impact test requirements.
Rib Tests:	All ribs passed all impact test requirements.
Abdomen Test:	The abdomen passed all impact test requirements.
Lumbar Spine Test:	The lumbar spine passed all impact test requirements.
Pelvis Test:	The pelvis passed all impact test requirements.

SID Calibration Data Sheet
Side Impact Dummy
Configured to Left/Right Side Impact

Calibration Date: 1/9/02

Technician: Tim Michnay

Tested Parameter	Units	Specification	Dummy Serial Number: 36		Dummy Serial Number: 37	
			Pre-Test	Post-Test	Pre-Test	Post-Test
SH – Seated Height	mm	889 - 909	903	903	902	902
RH – Rib Height	mm	501 – 521	506	506	509	509
HP – Hip Pivot Height	mm	99 ref.	99	99	99	99
RD-Rib from Back Line	mm	229 – 241	232	232	232	232
KV – Knee Pivot from Back Line	mm	511 – 526	518	518	519	519
SW – Knee Pivot to Floor	mm	490 – 505	497	497	493	493
HW – Hip Width	mm	356 – 391	370	370	378	378
Thorax Impact						
Laboratory Temperature	°C	18.9 to 25.5	22.0	22.0	22.0	22.2
Laboratory Relative Humidity	%	10 to 70	21	27	21	28
Probe Velocity	m/s	4.27 – 4.33	4.28	4.27	4.28	4.28
Upper Rib	G's	37 – 46	38	42	37	39
Lower Rib	G's	37 – 46	46	44	44	45
Lower Spine	G's	15 – 22	16	19	20	21
Pelvis Impact						
Laboratory Temperature	°C	18.9 to 25.5	22.0	21.7	22.0	22.0
Laboratory Relative Humidity	%	10 to 70	21	27	21	21
Probe Velocity	m/s	4.27 – 4.33	4.28	4.27	4.28	4.28
Pelvis	G's	40 - 60	46	42	46	48

SID Calibration Data Sheet
Side Impact Dummy
External Measurements

ATD Serial No.: 37

Test Number: D0201

Tested Parameter	Units	Specification	Result	Pass/Fail
SH – Seated Height	mm	889 – 909	902	Pass
RH – Rib Height	mm	501 – 521	509	Pass
HP – Hip Pivot Height	mm	99 ref.	99	Pass
RD-Rib from Back Line	mm	229 - 241	232	Pass
KV – Knee Pivot from Back Line	mm	511 – 526	519	Pass
SW – Knee Pivot to Floor	mm	490 – 505	493	Pass
HW – Hip Width	mm	356 – 391	378	Pass
Overall Test Results				Pass

Laboratory Technician

1/8/02
Test Date

Approved By

SID Calibration Data Sheet
Side Impact Dummy
Head Drop Calibration

ATD Serial No.: 37

Test I.D.: D02011

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	20	Pass
Peak Resultant Acceleration	G's	210 to 260	210	Pass
Peak Lateral Acceleration	G's	< 10	-7	Pass
Time Above 100 G	msec	0.9 – 1.5	1.1	Pass
Overall Test Results				Pass

Laboratory Technician

1/4/02
Test Date

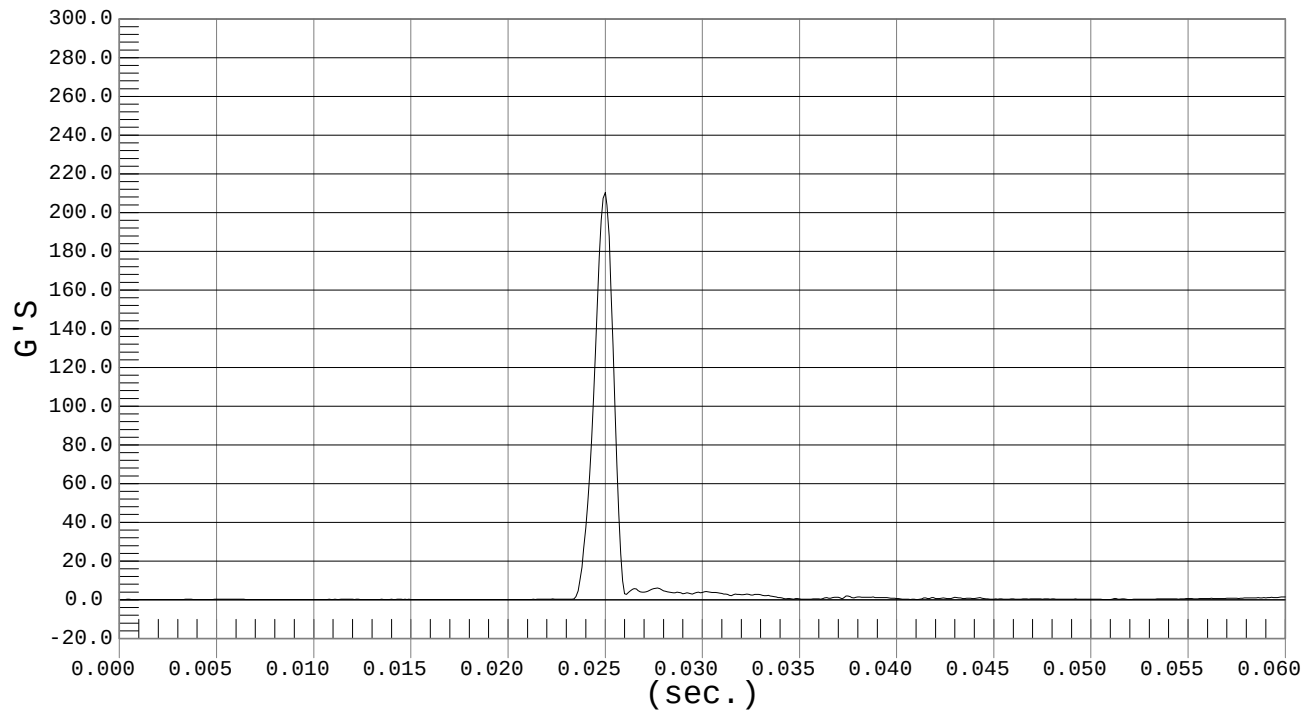
Approved By



Test Desc.: Head Drop
Component: Dummy #037

PEAK RESULTANT ACCELERATION

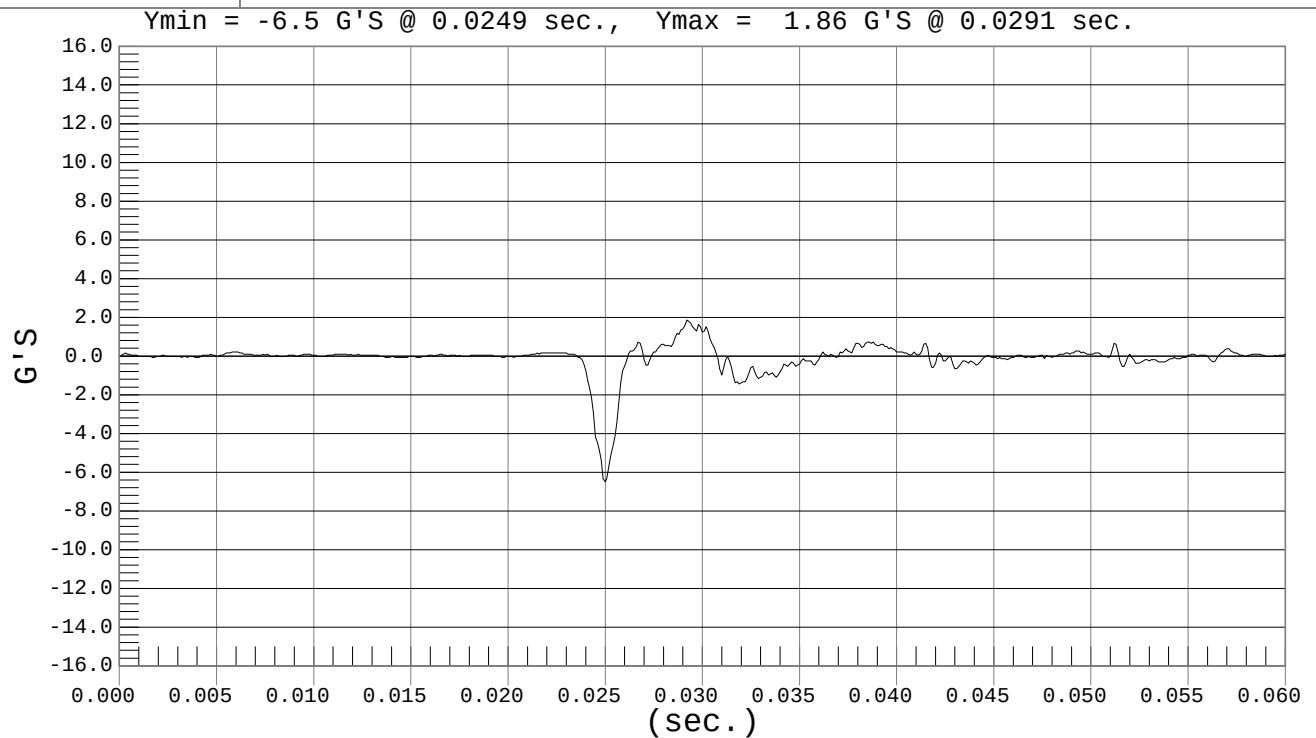
Test Date: 01-04-02
Speed: 0.0 fps, 0.00 M/s



Test Desc.: Head Drop
Component: Dummy #037

PEAK LATERAL ACCELARATION

Test Date: 01-04-02
Speed: 0.0 fps, 0.00 M/s



SID Calibration Data Sheet
Side Impact Dummy
Thoracic Shock Absorber Calibration

ATD Serial No.: 37

Test I.D.: D02016/7/8

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	18.9-25.5	21.5	Pass
Laboratory Relative Humidity		%	10-70	20	Pass
Velocity 3.05 m/s	Force	N	836-1125	1023	Pass
	Displacement	mm	30-35	30	Pass
Velocity 4.27 m/s	Force	N	1730-2099	1829	Pass
	Displacement	mm	32-37	33	Pass
Velocity 6.1 m/s	Force	N	3741-4448	4374	Pass
	Displacement	mm	33-40	37	Pass
Overall Test Results				Pass	

Laboratory Technician

1/7/02
Test Date

Approved By

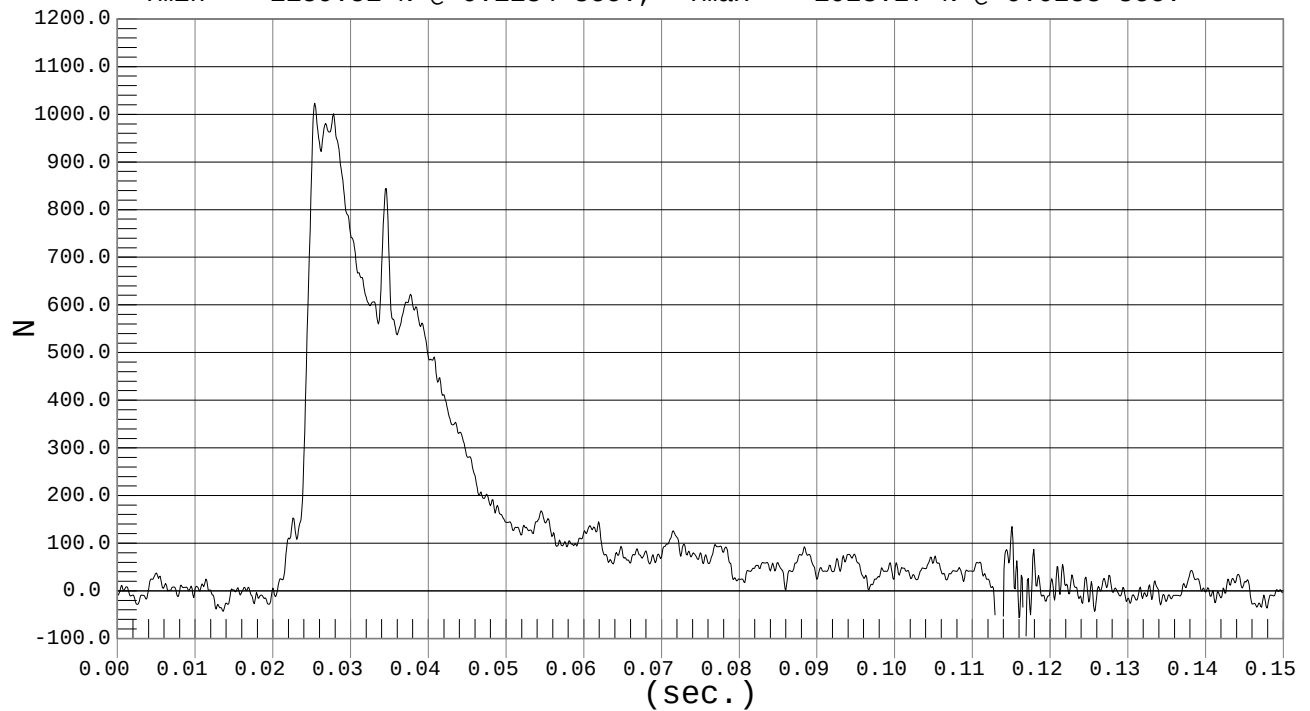


PEAK FORCE

Test Desc.: Dampener Impact
Component: Dummy #037

Test Date: 01-07-02
Speed: 10.0 fps, 3.05 M/s

Ymin = -1159.51 N @ 0.1134 sec., Ymax = 1023.27 N @ 0.0253 sec.

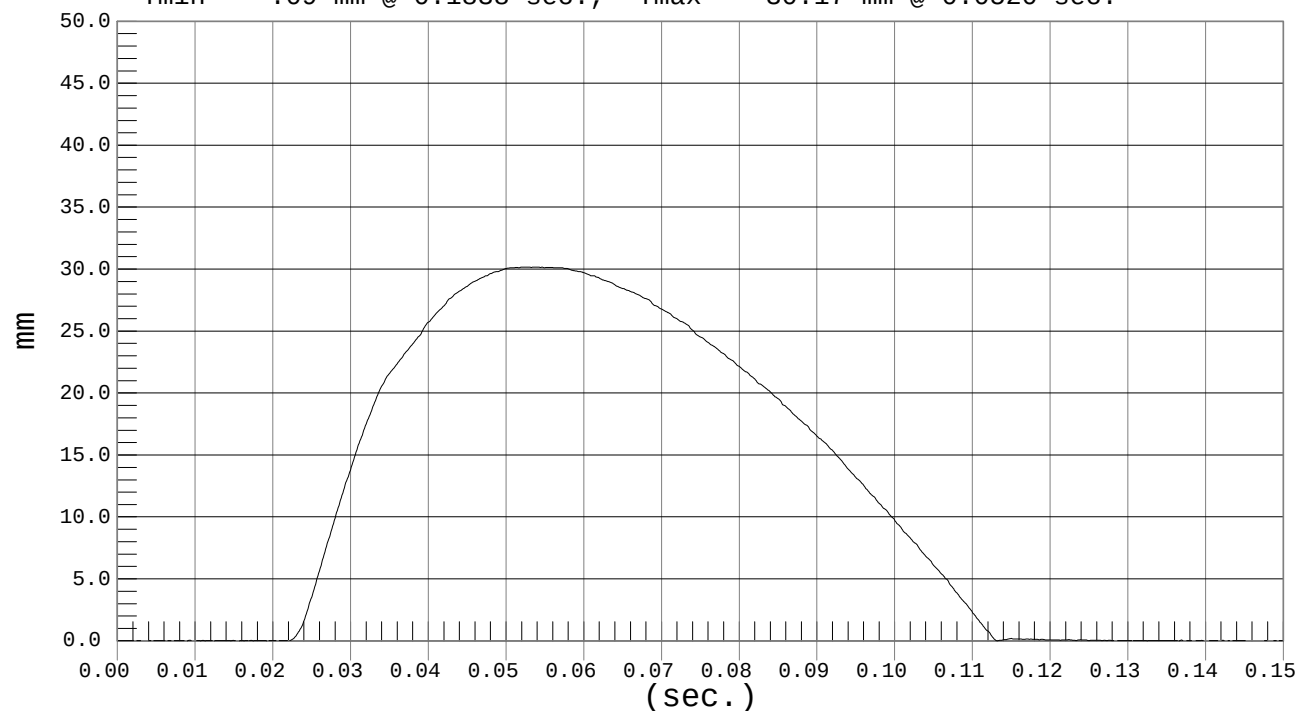


PEAK DISPLACEMENT

Test Desc.: Dampener Impact
Component: Dummy #037

Test Date: 01-07-02
Speed: 10.0 fps, 3.05 M/s

Ymin = -.09 mm @ 0.1838 sec., Ymax = 30.17 mm @ 0.0520 sec.



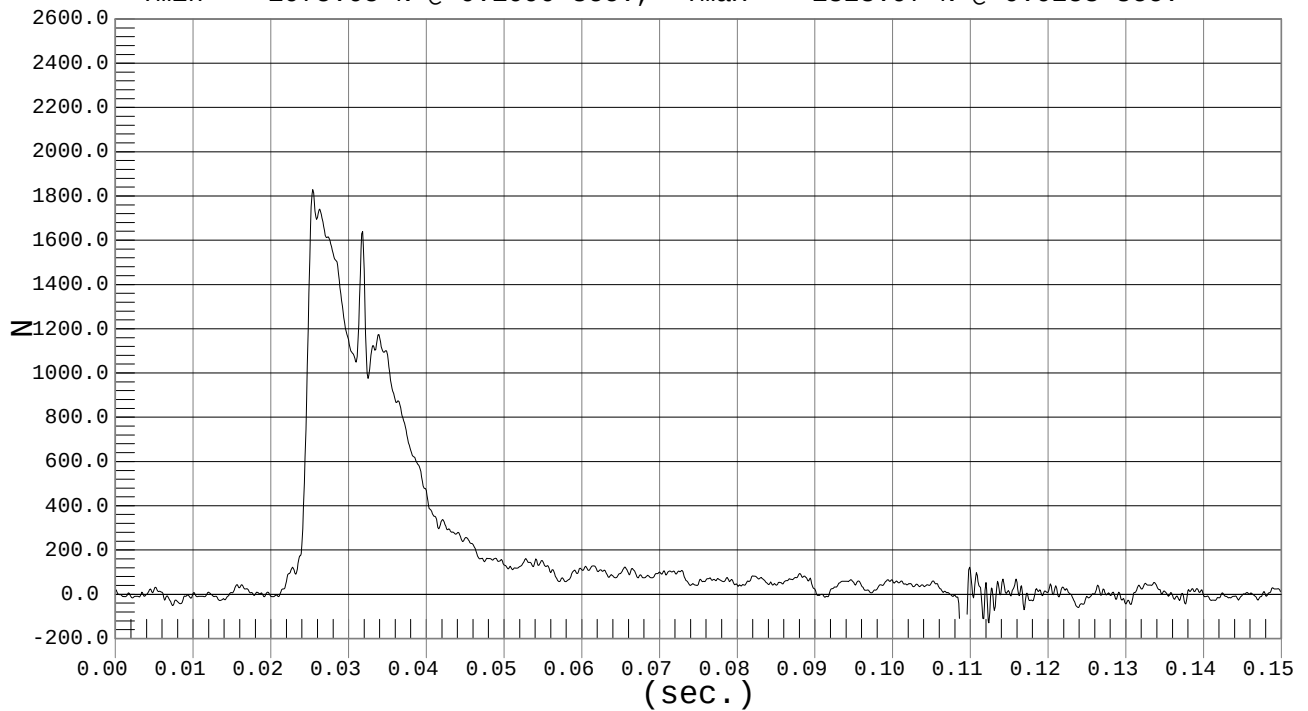


Test Desc.: Dampener Impact
Component: Dummy #037

PEAK FORCE

Test Date: 01-07-02
Speed: 14.0 fps, 4.27 M/s

Ymin = -1075.05 N @ 0.1090 sec., Ymax = 1828.97 N @ 0.0253 sec.

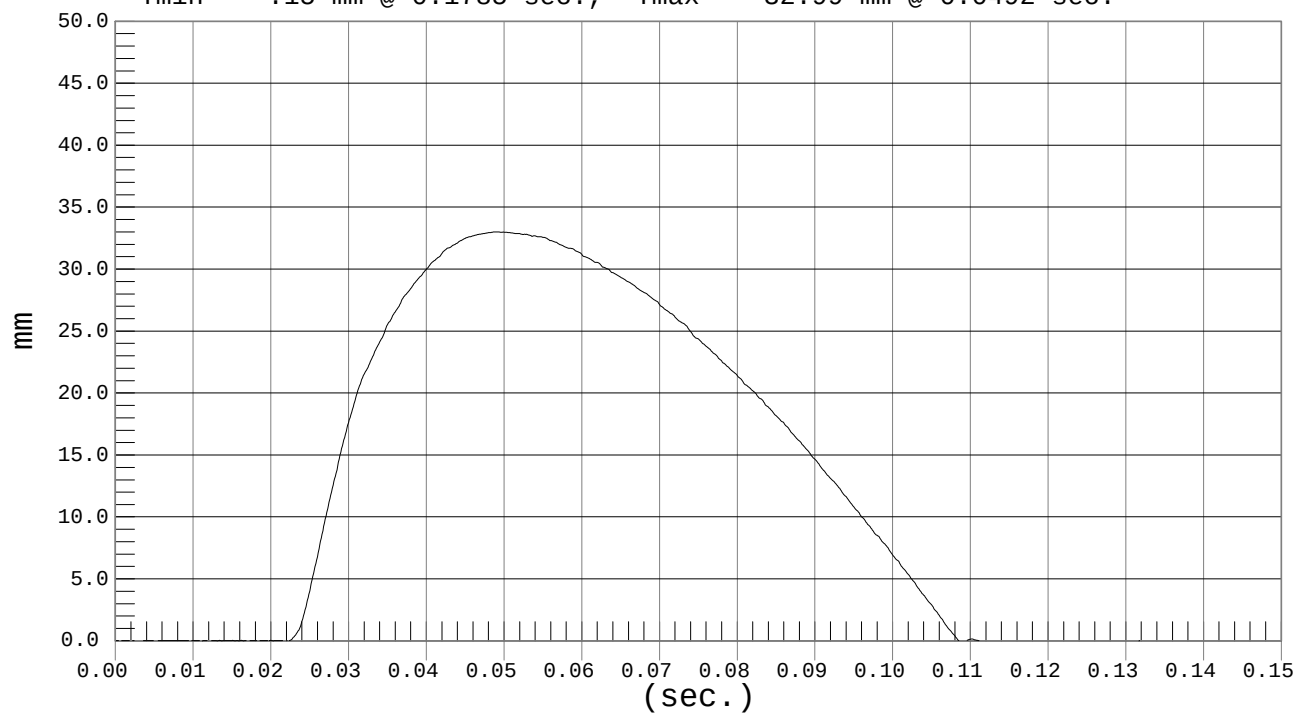


Test Desc.: Dampener Impact
Component: Dummy #037

PEAK DISPLACEMENT

Test Date: 01-07-02
Speed: 14.0 fps, 4.27 M/s

Ymin = -.15 mm @ 0.1785 sec., Ymax = 32.99 mm @ 0.0492 sec.

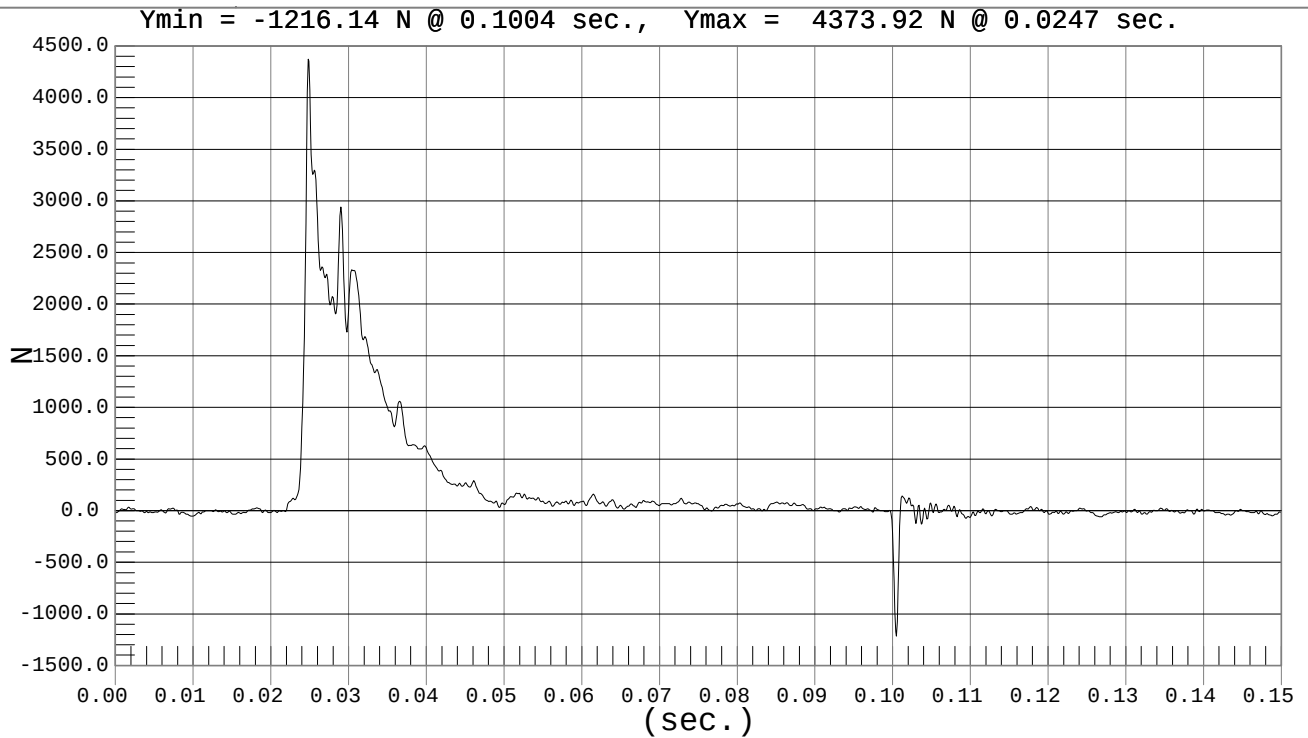




Test Desc.: Dampener Impact
Component: Dummy #037

PEAK FORCE

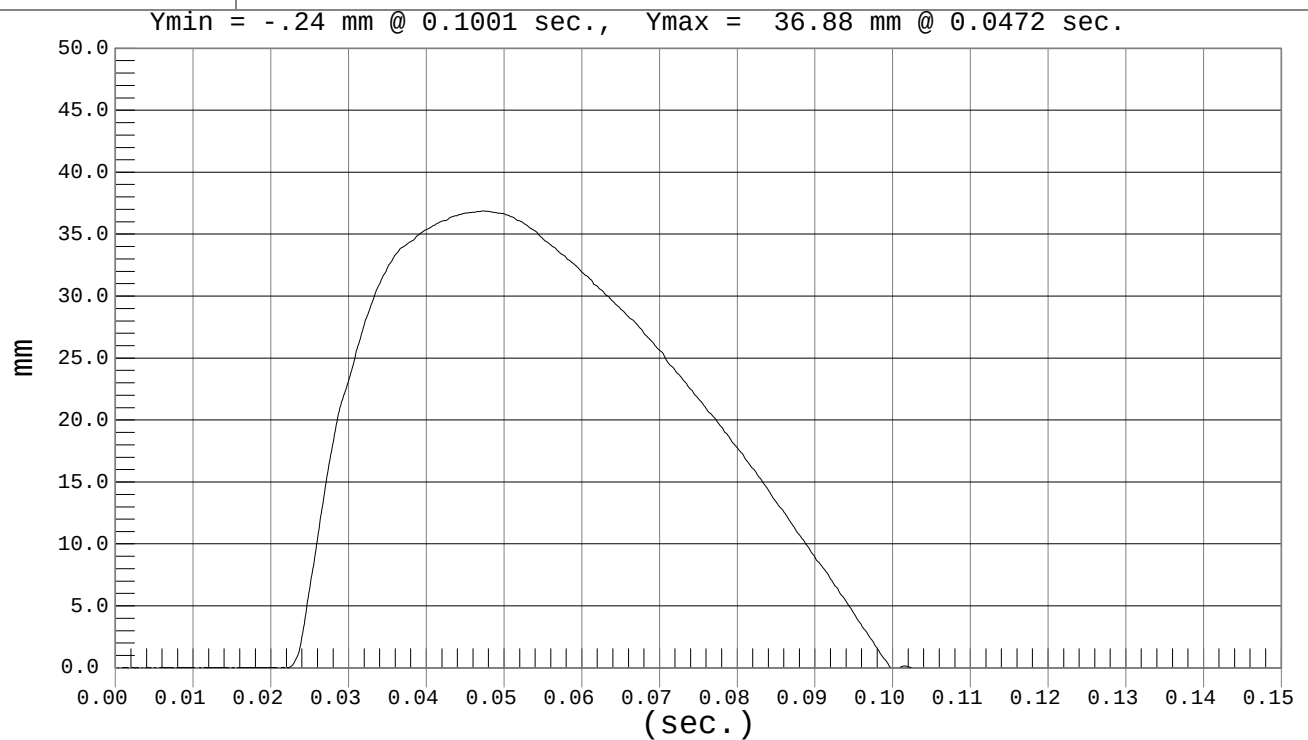
Test Date: 01-07-02
Speed: 20.0 fps, 6.10 M/s



Test Desc.: Dampener Impact
Component: Dummy #037

PEAK DISPLACEMENT

Test Date: 01-07-02
Speed: 20.0 fps, 6.10 M/s



SID Calibration Data Sheet
Side Impact Dummy
Thorax Impact Calibration

ATD Serial No.: 37

Test I.D.: D02012

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	22.0	Pass
Laboratory Relative Humidity	%	10 – 70	21	Pass
Probe Velocity	m/s	4.27 – 4.33	4.28	Pass
Upper Rib	G's	37 – 46	37	Pass
Lower Rib	G's	37 – 46	45	Pass
Lower Spine	G's	15 - 22	20	Pass
Overall Test Results				Pass

Laboratory Technician

1/8/02
Test Date

Approved By

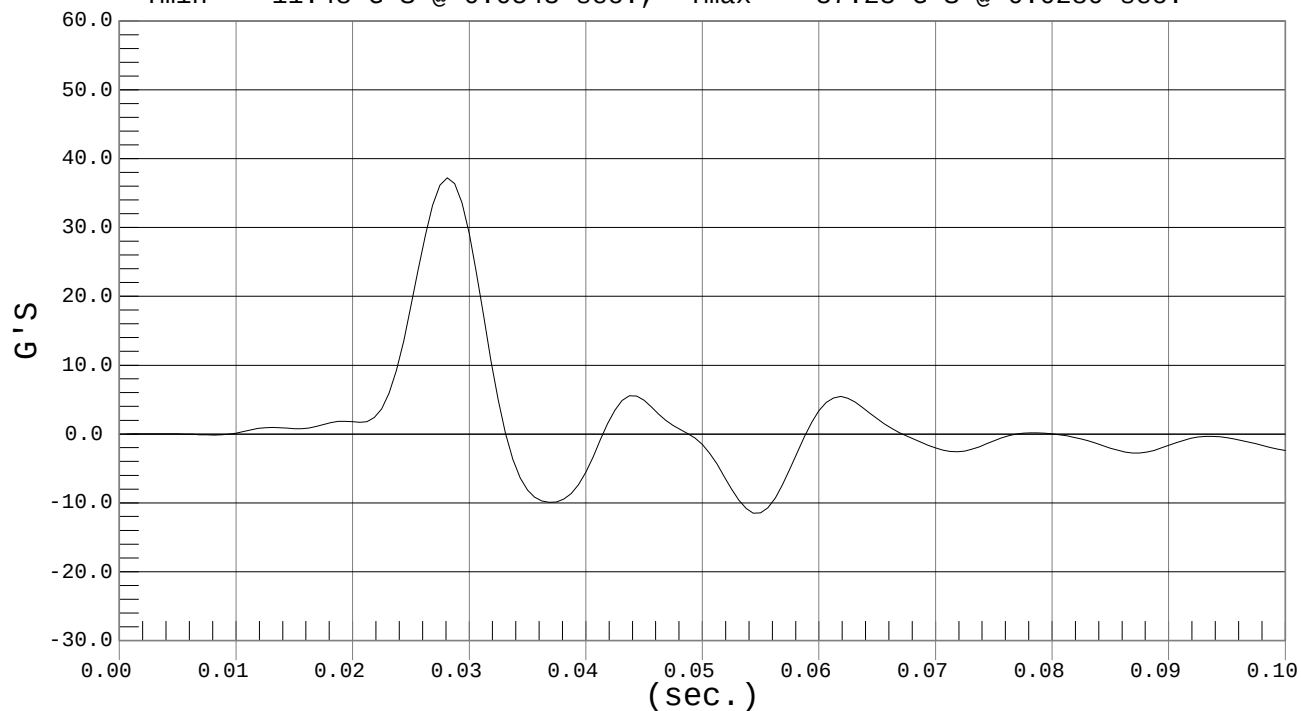


UPPER RIB ACCELERATION

Test Desc.: Thorax Impact
Component: Dummy #037

Test Date: 01-08-02
Speed: 14.0 fps, 4.28 M/s

Ymin = -11.48 G'S @ 0.0543 sec., Ymax = 37.23 G'S @ 0.0280 sec.

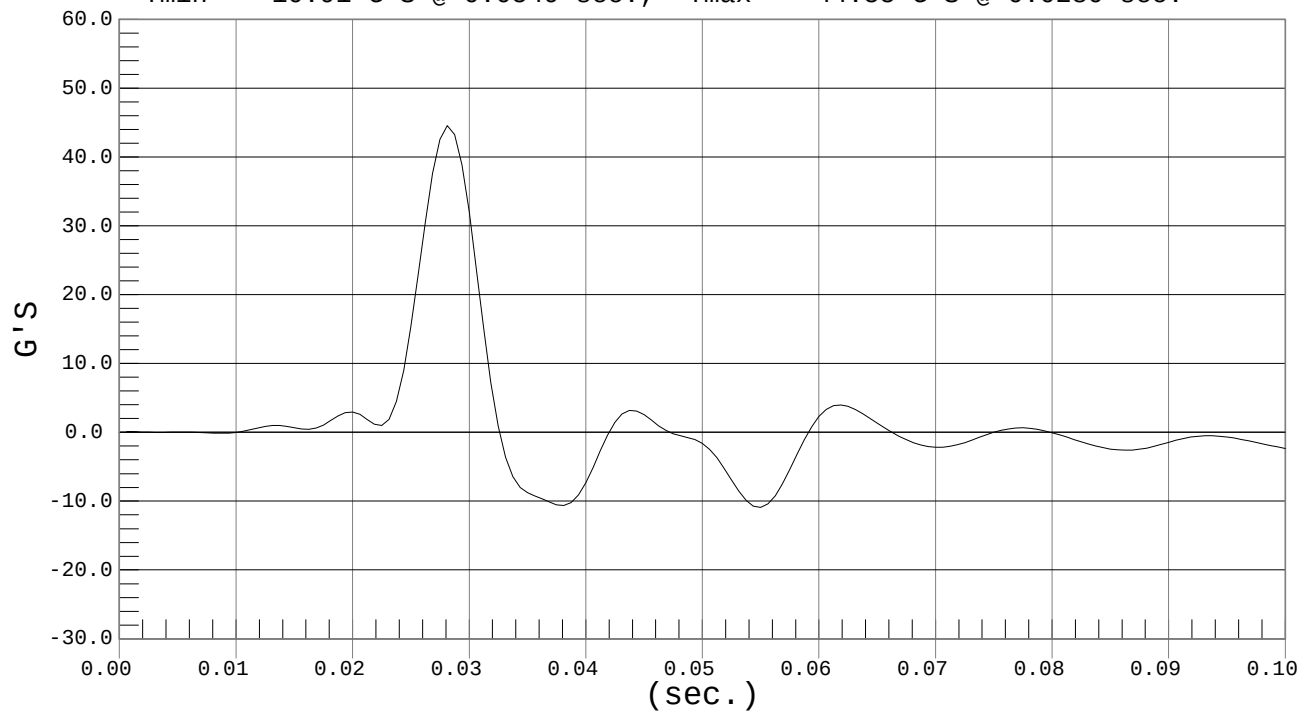


LOWER RIB ACCELERATION

Test Desc.: Thorax Impact
Component: Dummy #037

Test Date: 01-08-02
Speed: 14.0 fps, 4.28 M/s

Ymin = -10.91 G'S @ 0.0549 sec., Ymax = 44.55 G'S @ 0.0280 sec.



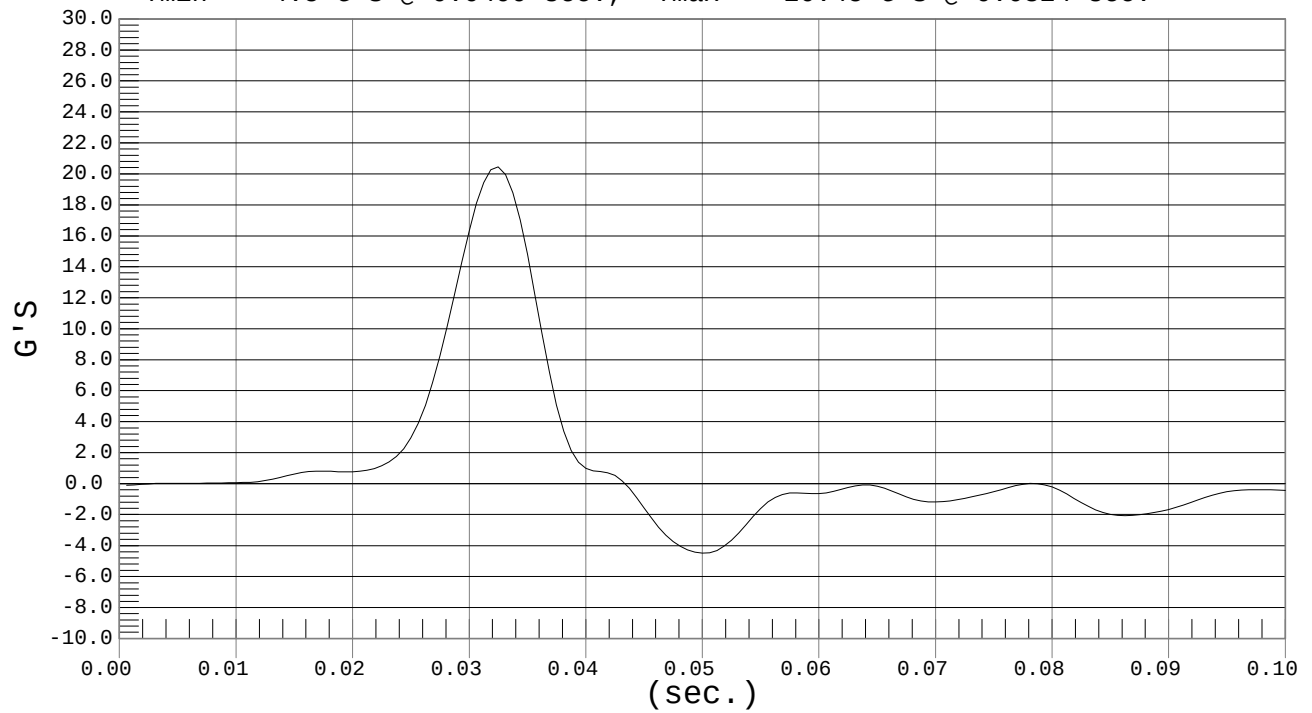


LOWER SPINE ACCELERATION

Test Desc.: Thorax Impact
Component: Dummy #037

Test Date: 01-08-02
Speed: 14.0 fps, 4.28 M/s

Ymin = -4.5 G'S @ 0.0499 sec., Ymax = 20.45 G'S @ 0.0324 sec.



SID Calibration Data Sheet
Side Impact Dummy
Pelvis Impact Calibration

ATD Serial No.: 37

Test I.D.: D02013

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	22.0	Pass
Laboratory Relative Humidity	%	10 – 70	21	Pass
Probe Speed	m/s	4.27 – 4.33	4.28	Pass
Pelvis Acceleration	G's	40 – 60	46	Pass
Overall Test Results			Pass	

Laboratory Technician

1/8/02
Test Date

Approved By

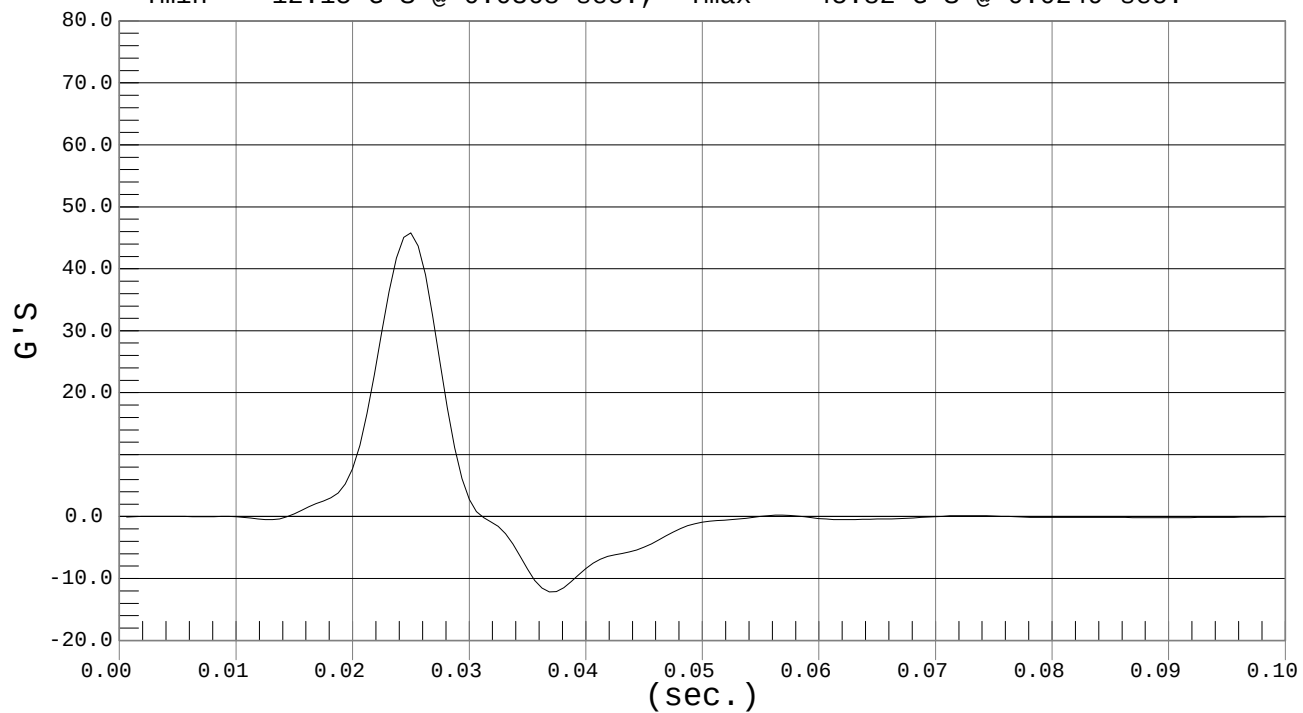


PELVIS ACCELERATION

Test Desc.: Pelvis Impact
Component: Dummy #037

Test Date: 01-08-02
Speed: 14.1 fps, 4.28 M/s

Ymin = -12.15 G'S @ 0.0368 sec., Ymax = 45.82 G'S @ 0.0249 sec.



SID Calibration Data Sheet
Side Impact Dummy
Abdominal Compression Calibration (Preload = 10 lbs)

ATD Serial No.: 37

Test I.D.: D02014

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	21.0	Pass
Laboratory Relative Humidity	%	10 – 70	15	Pass
Force @ 12.7	mm	104 – 162	136	Pass
Force @ 19	mm	163 – 222	193	Pass
Force @ 25.4	mm	222 – 280	264	Pass
Force @ 33	mm	325 - 391	388	Pass
Overall Test Results			Pass	

Laboratory Technician

1/7/02
Test Date

Approved By

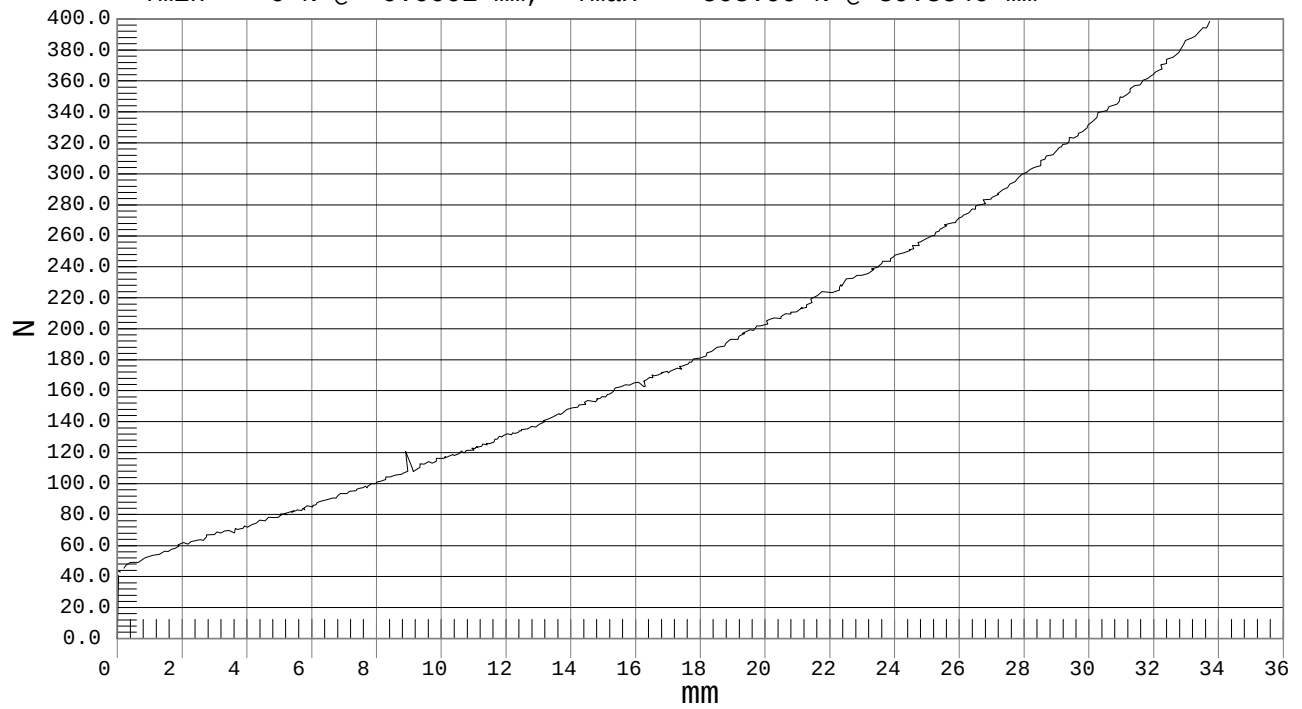


ABDOMEN COMPRESSION

Test Desc.: ABDOMEN COMPRESSION
Component: DUMMY # 037

Test Date: 01-07-02
Speed: 0.0 fps, 0.00 M/s

Ymin = 0 N @ -0.0001 mm, Ymax = 503.99 N @ 39.3540 mm



SID Calibration Data Sheet
Side Impact Dummy
Lumbar Flexion Calibration

ATD Serial No.: 37

Test I.D.: D02015

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	21.7	Pass
Laboratory Relative Humidity	%	10 – 70	19	Pass
Force @ 0	mm	0 – 26.7	0	Pass
Force @ 20	mm	97.9 – 151.2	149.9	Pass
Force @ 30	mm	151.2 – 204.6	195.4	Pass
Force @ 40	mm	204.6 – 258.0	245.4	Pass
Return Angle	Degrees	12° maximum	5	Pass
Overall Test Results				Pass

Laboratory Technician

1/4/02
Test Date

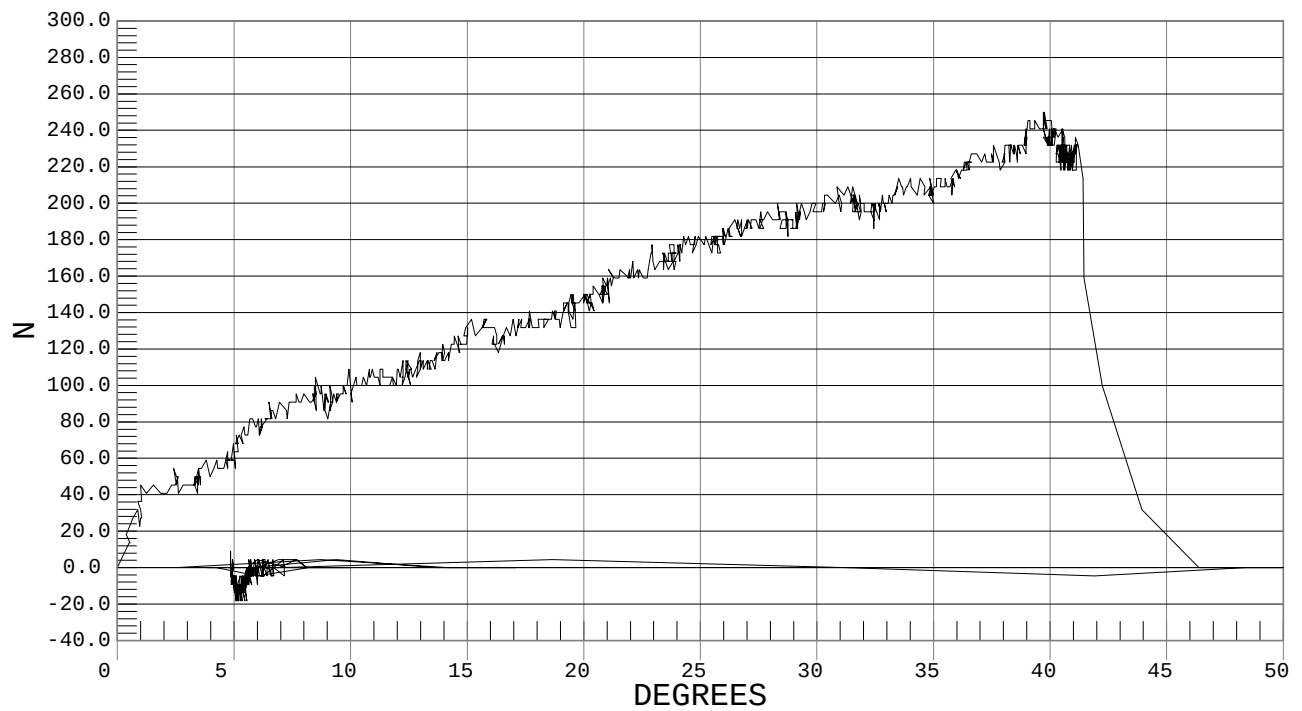
Approved By



LUMBAR FLEXION

Test Desc.: LUMBAR FLEXION
Component: DUMMY # 037

Test Date: 01-04-02
Speed: 0.0 fps, 0.00 M/s



SID Calibration Data Sheet
Side Impact Dummy
Inspection Checklist

ATD Serial No.: 37

Test Part	Items Checked	Result
Skin	Visual inspection	OK
Head	Visual, ballast, accelerometer mount	OK
Neck	Visual	OK
Spine Box	Visual, ballast, weldment, accelerometer mount	OK
Rib Cage	Visual, measure	OK
Sternum	Visual	OK
Lumbar Spine	Visual	OK
Abdomen	Visual	OK
Pelvis	Visual, palpate, accelerometer mount	OK
Upper Legs	Visual	OK
Knees	Visual	OK
Lower Legs	Visual, range of motion	OK
Ankles	Visual, range of motion	OK
Feet	Visual, range of motion	OK
Joints	1 to 2 g range	OK
Other		OK

Notes (include component/problem/section/reason):

Laboratory Technician

1/8/02
Test Date

Approved By

SID Calibration Data Sheet
Side Impact Dummy
Configured to Left/Right Side Impact

Calibration Date: 1/9/02

Technician: Tim Michnay

Tested Parameter	Units	Specification	Dummy Serial Number: 36		Dummy Serial Number: 37	
			Pre-Test	Post-Test	Pre-Test	Post-Test
SH – Seated Height	mm	889 - 909	903	903	902	902
RH – Rib Height	mm	501 – 521	506	506	509	509
HP – Hip Pivot Height	mm	99 ref.	99	99	99	99
RD-Rib from Back Line	mm	229 – 241	232	232	232	232
KV – Knee Pivot from Back Line	mm	511 – 526	518	518	519	519
SW – Knee Pivot to Floor	mm	490 – 505	497	497	493	493
HW – Hip Width	mm	356 – 391	370	370	378	378
Thorax Impact						
Laboratory Temperature	°C	18.9 to 25.5	22.0	22.0	22.0	22.2
Laboratory Relative Humidity	%	10 to 70	21	27	21	28
Probe Velocity	m/s	4.27 – 4.33	4.28	4.27	4.28	4.28
Upper Rib	G's	37 – 46	38	42	37	39
Lower Rib	G's	37 – 46	46	44	44	45
Lower Spine	G's	15 – 22	16	19	20	21
Pelvis Impact						
Laboratory Temperature	°C	18.9 to 25.5	22.0	21.7	22.0	22.0
Laboratory Relative Humidity	%	10 to 70	21	27	21	21
Probe Velocity	m/s	4.27 – 4.33	4.28	4.27	4.28	4.28
Pelvis	G's	40 - 60	46	42	46	48

CERTIFICATION DATA

Dummy Serial Number: 036

Calibration Test Results Summary

Dummy Serial Number: 036

Post-Test Calibration

Head Drop Test:	The head passed all drop test requirements.
Neck Pendulum Test:	The neck passed all impact test requirements.
Shoulder Impact Test:	The shoulder passed all impact test requirements.
Rib Tests:	All ribs passed all impact test requirements.
Abdomen Test:	The abdomen passed all impact test requirements.
Lumbar Spine Test:	The lumbar spine passed all impact test requirements.
Pelvis Test:	The pelvis passed all impact test requirements.

SID Calibration Data Sheet
Side Impact Dummy
External Measurements

ATD Serial No.: 36

Test Number: D0204

Tested Parameter	Units	Specification	Result	Pass/Fail
SH – Seated Height	mm	889 – 909	903	Pass
RH – Rib Height	mm	501 – 521	506	Pass
HP – Hip Pivot Height	mm	99 ref.	99	Pass
RD-Rib from Back Line	mm	229 - 241	232	Pass
KV – Knee Pivot from Back Line	mm	511 – 526	518	Pass
SW – Knee Pivot to Floor	mm	490 – 505	497	Pass
HW – Hip Width	mm	356 – 391	370	Pass
Overall Test Results			Pass	

Laboratory Technician

1/15/02
Test Date

Approved By

SID Calibration Data Sheet
Side Impact Dummy
Head Drop Calibration

ATD Serial No.:36

Test I.D.:D02041

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	22.0	Pass
Laboratory Relative Humidity	%	10 to 70	29	Pass
Peak Resultant Acceleration	G's	210 to 260	257	Pass
Peak Lateral Acceleration	G's	< 10	-3	Pass
Time Above 100 G	msec	0.9 – 1.5	1.1	Pass
Overall Test Results				Pass

Laboratory Technician

1/15/02
Test Date

Approved By

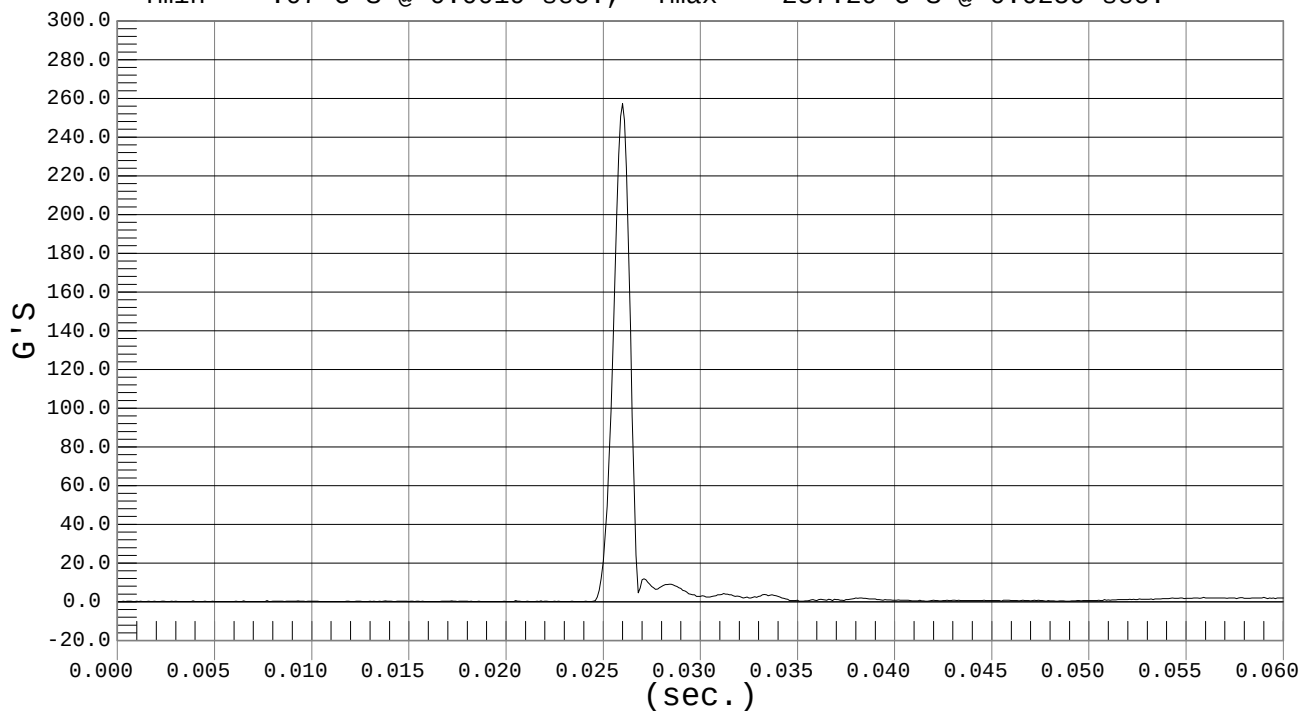


PEAK RESULTANT ACCELERATION

Test Desc.: Head Drop
Component: Dummy #036

Test Date: 01-15-02
Speed: 0.0 fps, 0.00 M/s

Ymin = .07 G'S @ 0.0019 sec., Ymax = 257.29 G'S @ 0.0259 sec.

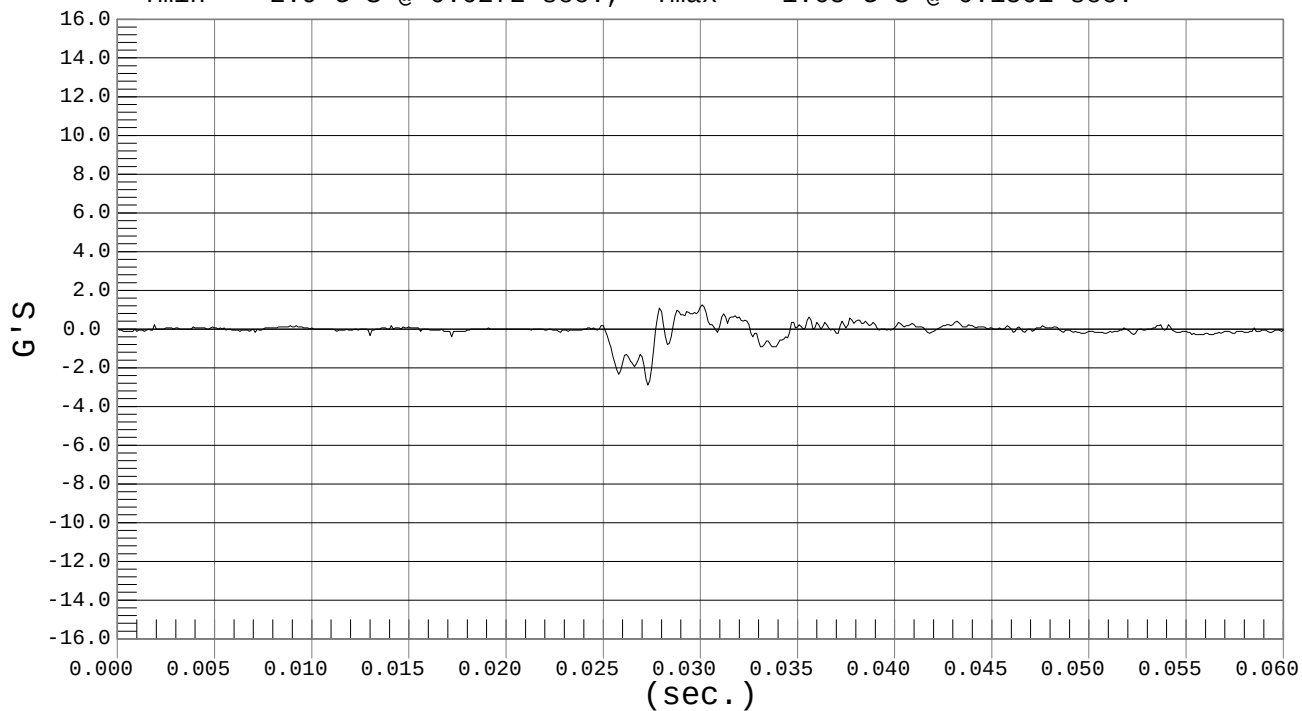


PEAK LATERAL ACCELARATION

Test Desc.: Head Drop
Component: Dummy #036

Test Date: 01-15-02
Speed: 0.0 fps, 0.00 M/s

Ymin = -2.9 G'S @ 0.0272 sec., Ymax = 1.65 G'S @ 0.1501 sec.



SID Calibration Data Sheet
Side Impact Dummy
Thorax Impact Calibration

ATD Serial No.:36

Test I.D.:D02042

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	22.0	Pass
Laboratory Relative Humidity	%	10 – 70	27	Pass
Probe Velocity	m/s	4.27 – 4.33	4.27	Pass
Upper Rib	G's	37 – 46	42	Pass
Lower Rib	G's	37 – 46	44	Pass
Lower Spine	G's	15 - 22	19	Pass
Overall Test Results				Pass

Laboratory Technician

1/15/02
Test Date

Approved By

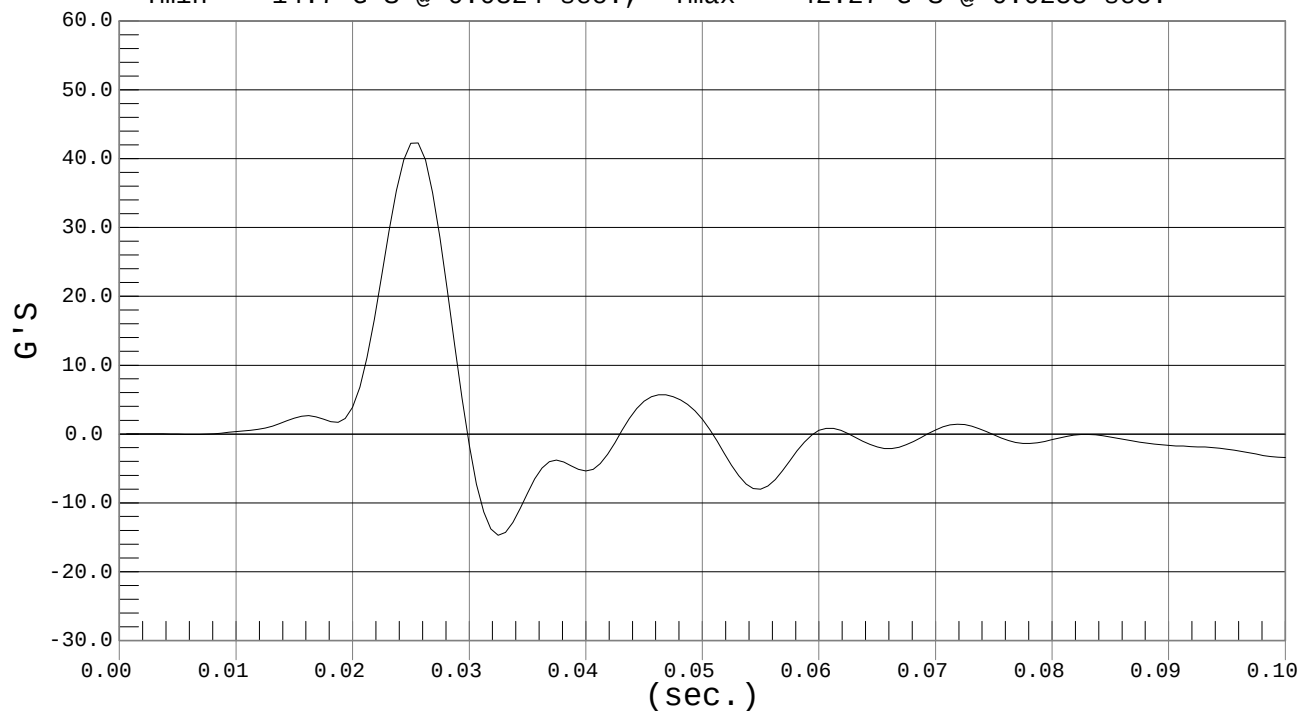


UPPER RIB ACCELERATION

Test Desc.: Thorax Impact
Component: Dummy #036

Test Date: 01-15-02
Speed: 14.0 fps, 4.27 M/s

Ymin = -14.7 G'S @ 0.0324 sec., Ymax = 42.27 G'S @ 0.0255 sec.

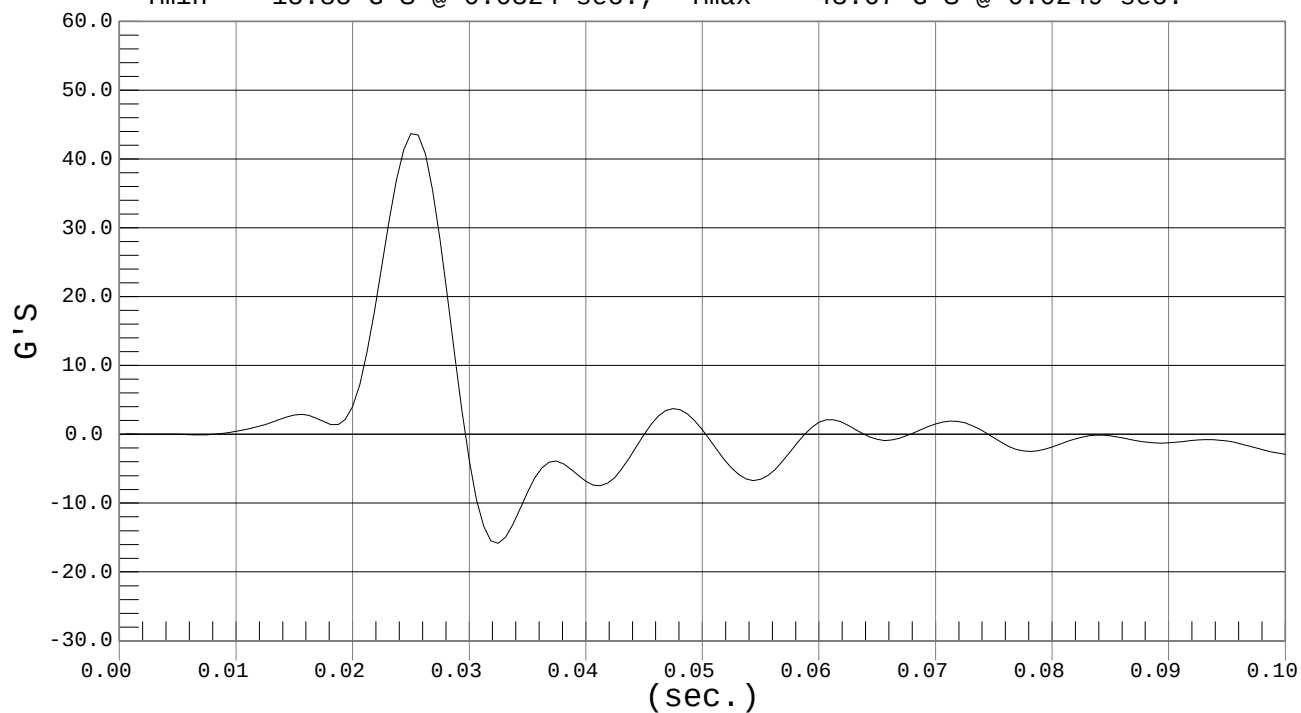


LOWER RIB ACCELERATION

Test Desc.: Thorax Impact
Component: Dummy #036

Test Date: 01-15-02
Speed: 14.0 fps, 4.27 M/s

Ymin = -15.85 G'S @ 0.0324 sec., Ymax = 43.67 G'S @ 0.0249 sec.



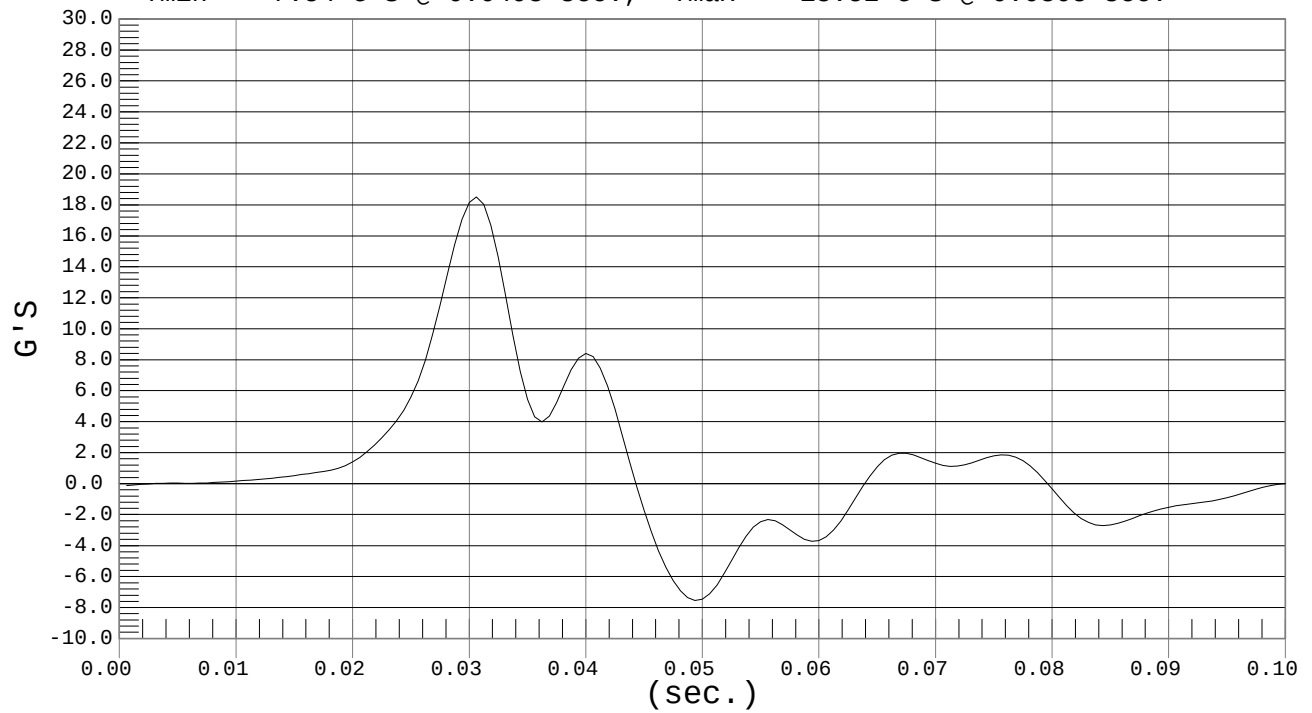


LOWER SPINE ACCELERATION

Test Desc.: Thorax Impact
Component: Dummy #036

Test Date: 01-15-02
Speed: 14.0 fps, 4.27 M/s

Ymin = -7.54 G'S @ 0.0493 sec., Ymax = 18.52 G'S @ 0.0305 sec.



SID Calibration Data Sheet
Side Impact Dummy
Pelvis Impact Calibration

ATD Serial No.:36

Test I.D.:D02043

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	21.7	Pass
Laboratory Relative Humidity	%	10 – 70	27	Pass
Probe Speed	m/s	4.27 – 4.33	4.27	Pass
Pelvis Acceleration	G's	40 – 60	42	Pass
Overall Test Results			Pass	

Laboratory Technician

1/15/02
Test Date

Approved By

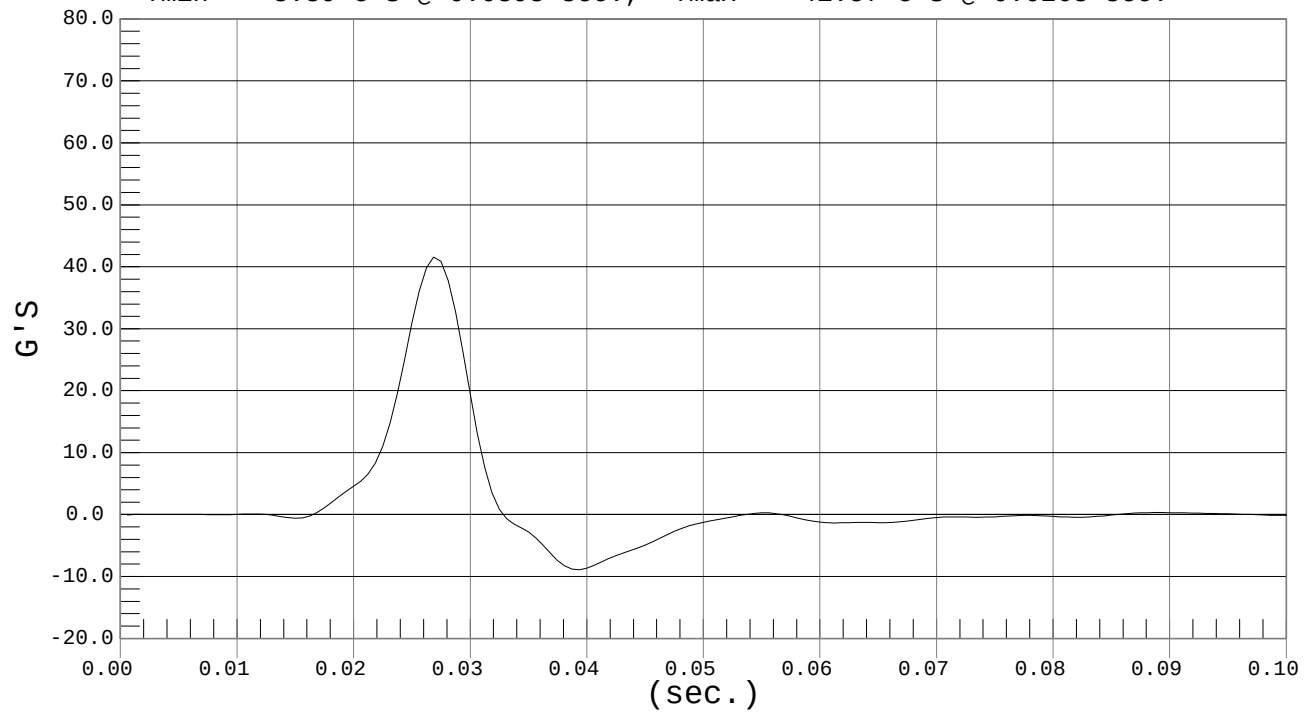


PELVIS ACCELERATION

Test Desc.: Pelvis Impact
Component: Dummy #036

Test Date: 01-15-02
Speed: 14.0 fps, 4.27 M/s

Ymin = -8.89 G'S @ 0.0393 sec., Ymax = 41.57 G'S @ 0.0268 sec.



SID Calibration Data Sheet
Side Impact Dummy
Abdominal Compression Calibration (Preload = 10 lbs)

ATD Serial No.: 36

Test I.D.: D02044

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	22.6	Pass
Laboratory Relative Humidity	%	10 – 70	25	Pass
Force @ 12.7	mm	104 – 162	139	Pass
Force @ 19	mm	163 – 222	189	Pass
Force @ 25.4	mm	222 – 280	243	Pass
Force @ 33	mm	325 - 391	345	Pass
Overall Test Results				Pass

Laboratory Technician

1/14/02
Test Date

Approved By

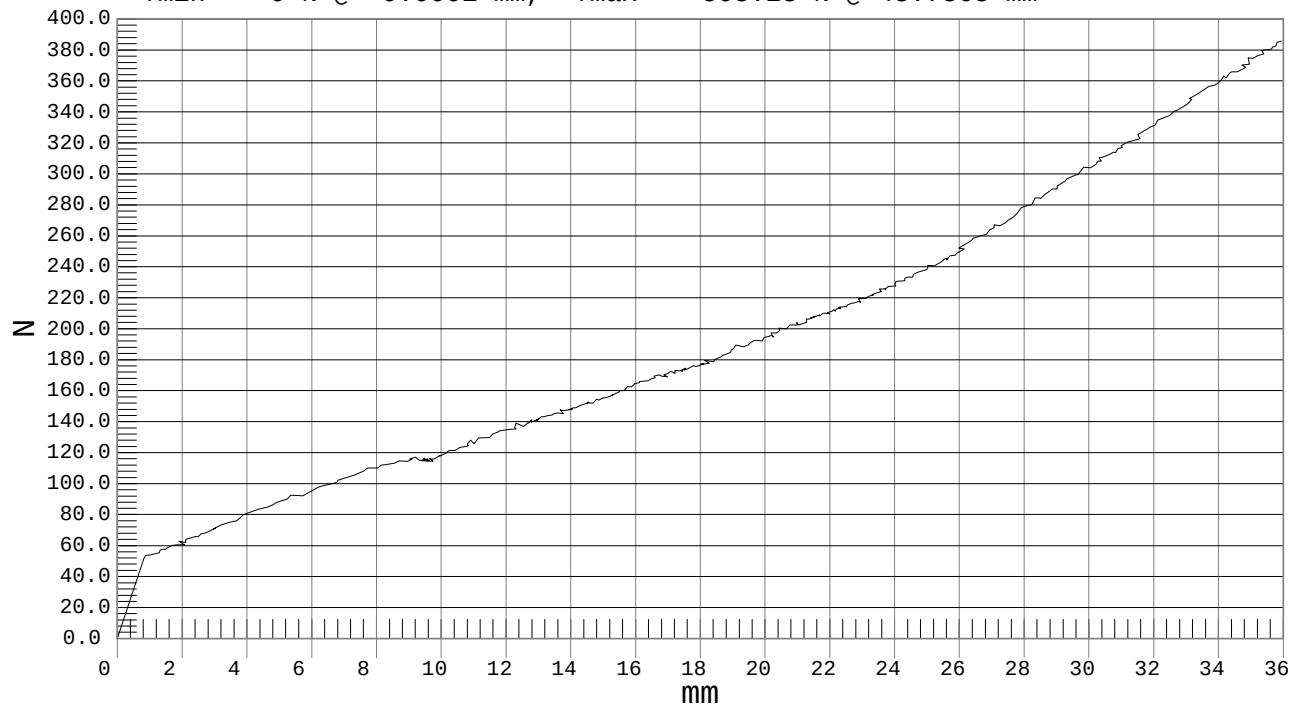


ABDOMEN COMPRESSION

Test Desc.: ABDOMEN COMPRESSION
Component: DUMMY # 036

Test Date: 01-14-02
Speed: 0.0 fps, 0.00 M/s

Ymin = 0 N @ -0.0001 mm, Ymax = 508.23 N @ 43.7868 mm



SID Calibration Data Sheet
Side Impact Dummy
Lumbar Flexion Calibration

ATD Serial No.: 36

Test I.D.: D02045

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	22.6	Pass
Laboratory Relative Humidity	%	10 – 70	25	Pass
Force @ 0	mm	0 – 26.7	0	Pass
Force @ 20	mm	97.9 – 151.2	121.5	Pass
Force @ 30	mm	151.2 – 204.6	173.6	Pass
Force @ 40	mm	204.6 – 258.0	217.7	Pass
Return Angle	Degrees	12° maximum	7	Pass
Overall Test Results				Pass

Laboratory Technician

1/14/02
Test Date

Approved By

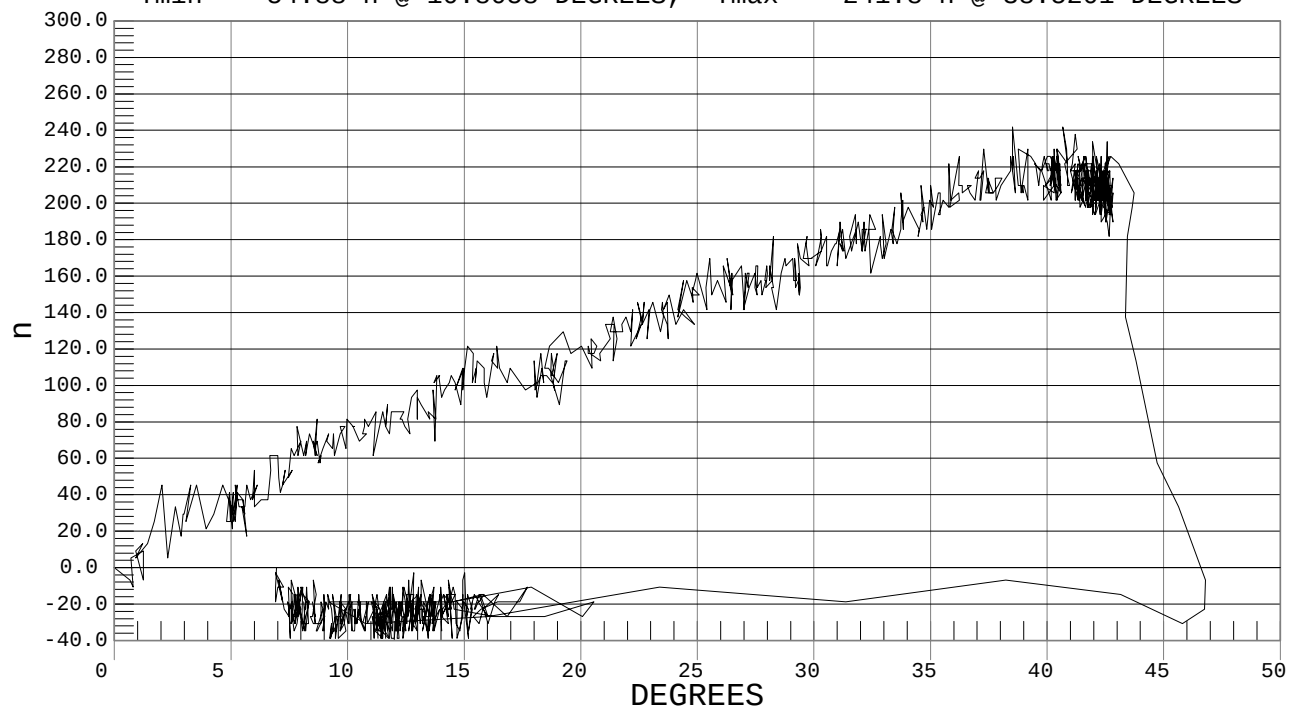


LUMBAR FLEXION

Test Desc.: LUMBAR FLEXION
Component: DUMMY # 036

Test Date: 01-14-02
Speed: 0.0 fps, 0.00 M/s

Ymin = -54.88 n @ 10.8058 DEGREES, Ymax = 241.8 n @ 38.5201 DEGREES



SID Calibration Data Sheet
Side Impact Dummy
Inspection Checklist

ATD Serial No.: 36

Test Part	Items Checked	Result
Skin	Visual inspection	OK
Head	Visual, ballast, accelerometer mount	OK
Neck	Visual	OK
Spine Box	Visual, ballast, weldment, accelerometer mount	OK
Rib Cage	Visual, measure	OK
Sternum	Visual	OK
Lumbar Spine	Visual	OK
Abdomen	Visual	OK
Pelvis	Visual, palpate, accelerometer mount	OK
Upper Legs	Visual	OK
Knees	Visual	OK
Lower Legs	Visual, range of motion	OK
Ankles	Visual, range of motion	OK
Feet	Visual, range of motion	OK
Joints	1 to 2 g range	OK
Other		OK

Notes (include component/problem/section/reason):

Laboratory Technician

1/15/02
Test Date

Approved By

SID Calibration Data Sheet
Side Impact Dummy
Configured to Left/Right Side Impact

Calibration Date: 1/9/02

Technician: Tim Michnay

Tested Parameter	Units	Specification	Dummy Serial Number: 36		Dummy Serial Number: 37	
			Pre-Test	Post-Test	Pre-Test	Post-Test
SH – Seated Height	mm	889 - 909	903	903	902	902
RH – Rib Height	mm	501 – 521	506	506	509	509
HP – Hip Pivot Height	mm	99 ref.	99	99	99	99
RD-Rib from Back Line	mm	229 – 241	232	232	232	232
KV – Knee Pivot from Back Line	mm	511 – 526	518	518	519	519
SW – Knee Pivot to Floor	mm	490 – 505	497	497	493	493
HW – Hip Width	mm	356 – 391	370	370	378	378
Thorax Impact						
Laboratory Temperature	°C	18.9 to 25.5	22.0	22.0	22.0	22.2
Laboratory Relative Humidity	%	10 to 70	21	27	21	28
Probe Velocity	m/s	4.27 – 4.33	4.28	4.27	4.28	4.28
Upper Rib	G's	37 – 46	38	42	37	39
Lower Rib	G's	37 – 46	46	44	44	45
Lower Spine	G's	15 – 22	16	19	20	21
Pelvis Impact						
Laboratory Temperature	°C	18.9 to 25.5	22.0	21.7	22.0	22.0
Laboratory Relative Humidity	%	10 to 70	21	27	21	21
Probe Velocity	m/s	4.27 – 4.33	4.28	4.27	4.28	4.28
Pelvis	G's	40 - 60	46	42	46	48

CERTIFICATION DATA

Dummy Serial Number: 037

Calibration Test Results Summary

Dummy Serial Number: 037

Post-Test Calibration

Head Drop Test:	The head passed all drop test requirements.
Neck Pendulum Test:	The neck passed all impact test requirements.
Shoulder Impact Test:	The shoulder passed all impact test requirements.
Rib Tests:	All ribs passed all impact test requirements.
Abdomen Test:	The abdomen passed all impact test requirements.
Lumbar Spine Test:	The lumbar spine passed all impact test requirements.
Pelvis Test:	The pelvis passed all impact test requirements.

SID Calibration Data Sheet
Side Impact Dummy
External Measurements

ATD Serial No.: 37

Test Number: D0205

Tested Parameter	Units	Specification	Result	Pass/Fail
SH – Seated Height	mm	889 – 909	902	Pass
RH – Rib Height	mm	501 – 521	509	Pass
HP – Hip Pivot Height	mm	99 ref.	99	Pass
RD-Rib from Back Line	mm	229 - 241	232	Pass
KV – Knee Pivot from Back Line	mm	511 – 526	519	Pass
SW – Knee Pivot to Floor	mm	490 – 505	493	Pass
HW – Hip Width	mm	356 – 391	378	Pass
Overall Test Results				Pass

Laboratory Technician

1/15/01
Test Date

Approved By

SID Calibration Data Sheet
Side Impact Dummy
Head Drop Calibration

ATD Serial No.: 37

Test I.D.: D02051

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	22.0	Pass
Laboratory Relative Humidity	%	10 to 70	29	Pass
Peak Resultant Acceleration	G's	210 to 260	223	Pass
Peak Lateral Acceleration	G's	< 10	2	Pass
Time Above 100 G	msec	0.9 – 1.5	1.1	Pass
Overall Test Results				Pass

Laboratory Technician

1/15/02
Test Date

Approved By

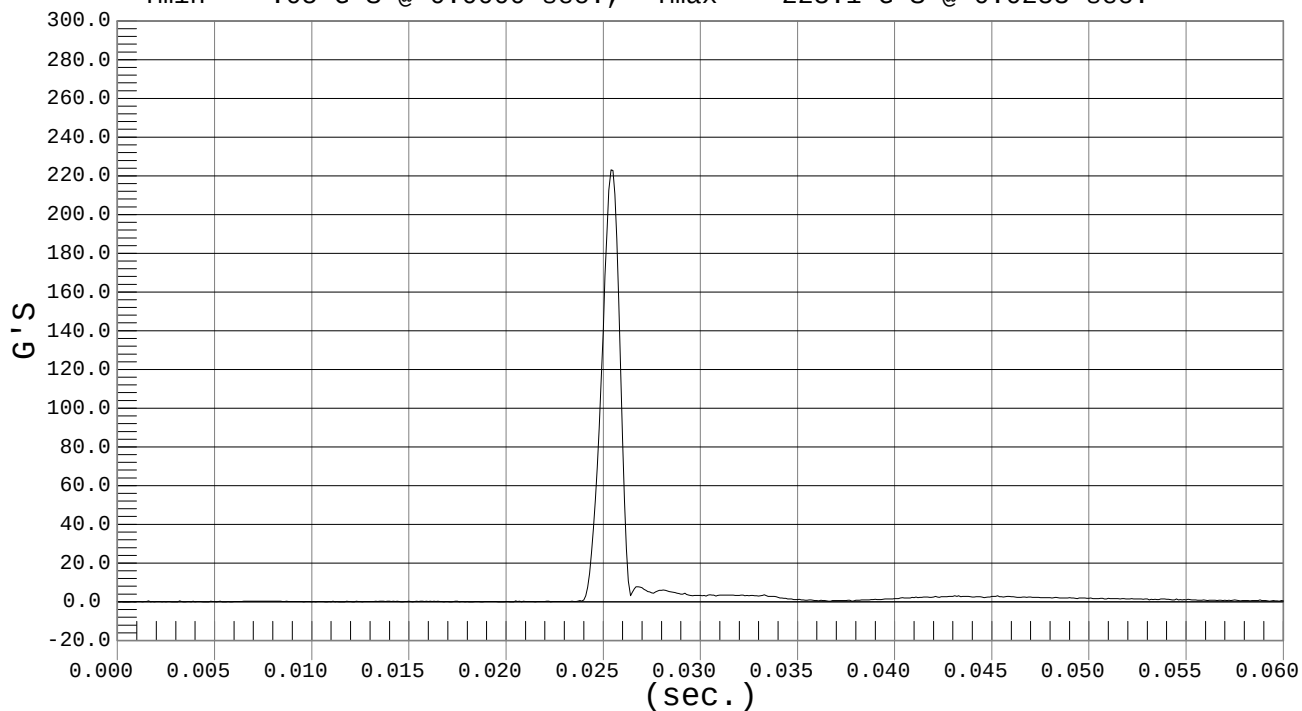


PEAK RESULTANT ACCELERATION

Test Desc.: Head Drop
Component: Dummy #037

Test Date: 01-15-02
Speed: 0.0 fps, 0.00 M/s

Ymin = .05 G'S @ 0.0000 sec., Ymax = 223.1 G'S @ 0.0253 sec.

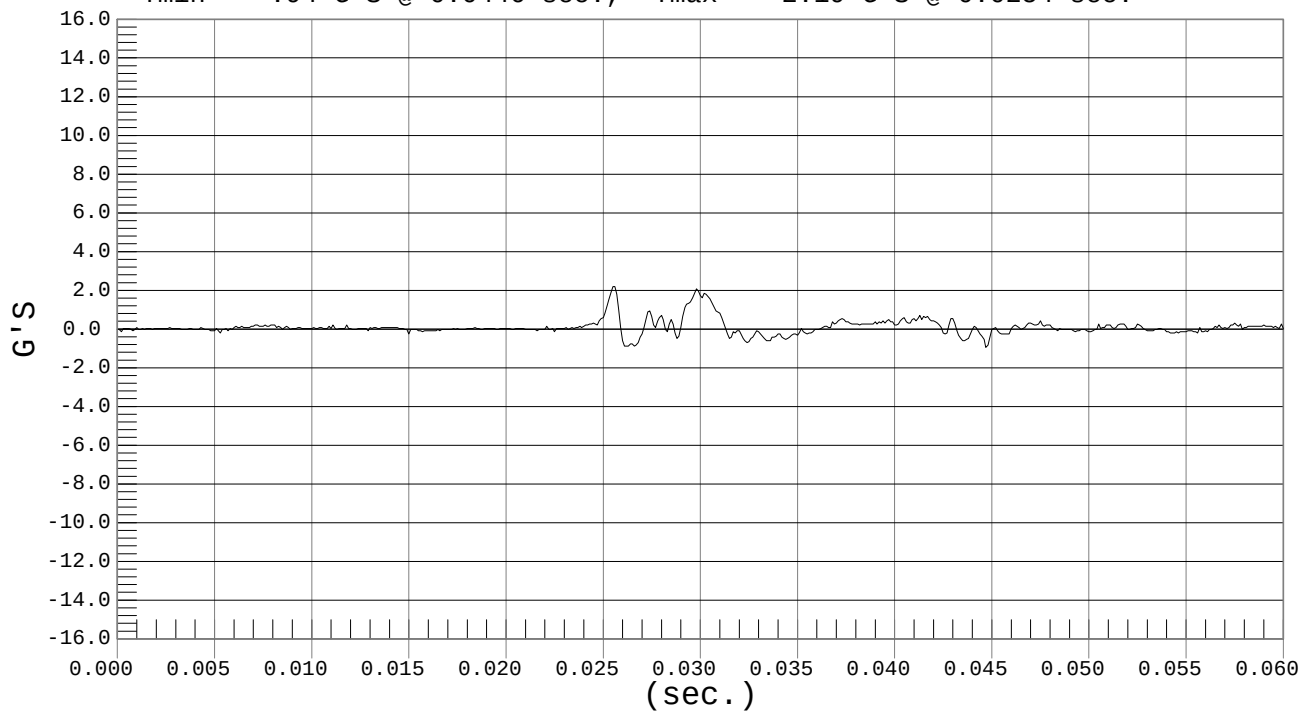


PEAK LATERAL ACCELARATION

Test Desc.: Head Drop
Component: Dummy #037

Test Date: 01-15-02
Speed: 0.0 fps, 0.00 M/s

Ymin = -.94 G'S @ 0.0446 sec., Ymax = 2.19 G'S @ 0.0254 sec.



SID Calibration Data Sheet
Side Impact Dummy
Thorax Impact Calibration

ATD Serial No.: 37

Test I.D.: D02052

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	22.2	Pass
Laboratory Relative Humidity	%	10 – 70	28	Pass
Probe Velocity	m/s	4.27 – 4.33	4.28	Pass
Upper Rib	G's	37 – 46	39	Pass
Lower Rib	G's	37 – 46	45	Pass
Lower Spine	G's	15 - 22	21	Pass
Overall Test Results				Pass

Laboratory Technician

1/15/02
Test Date

Approved By

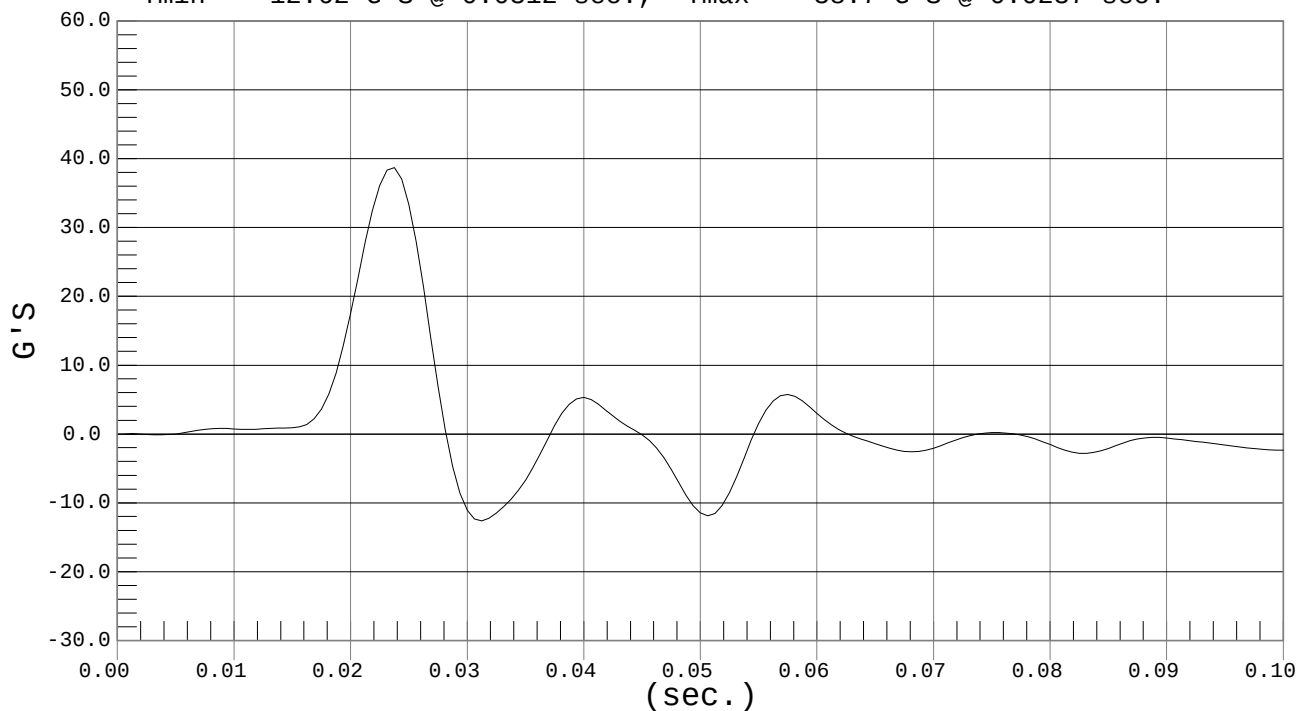


UPPER RIB ACCELERATION

Test Desc.: Thorax Impact
Component: Dummy #037

Test Date: 01-15-02
Speed: 14.1 fps, 4.28 M/s

Ymin = -12.62 G'S @ 0.0312 sec., Ymax = 38.7 G'S @ 0.0237 sec.

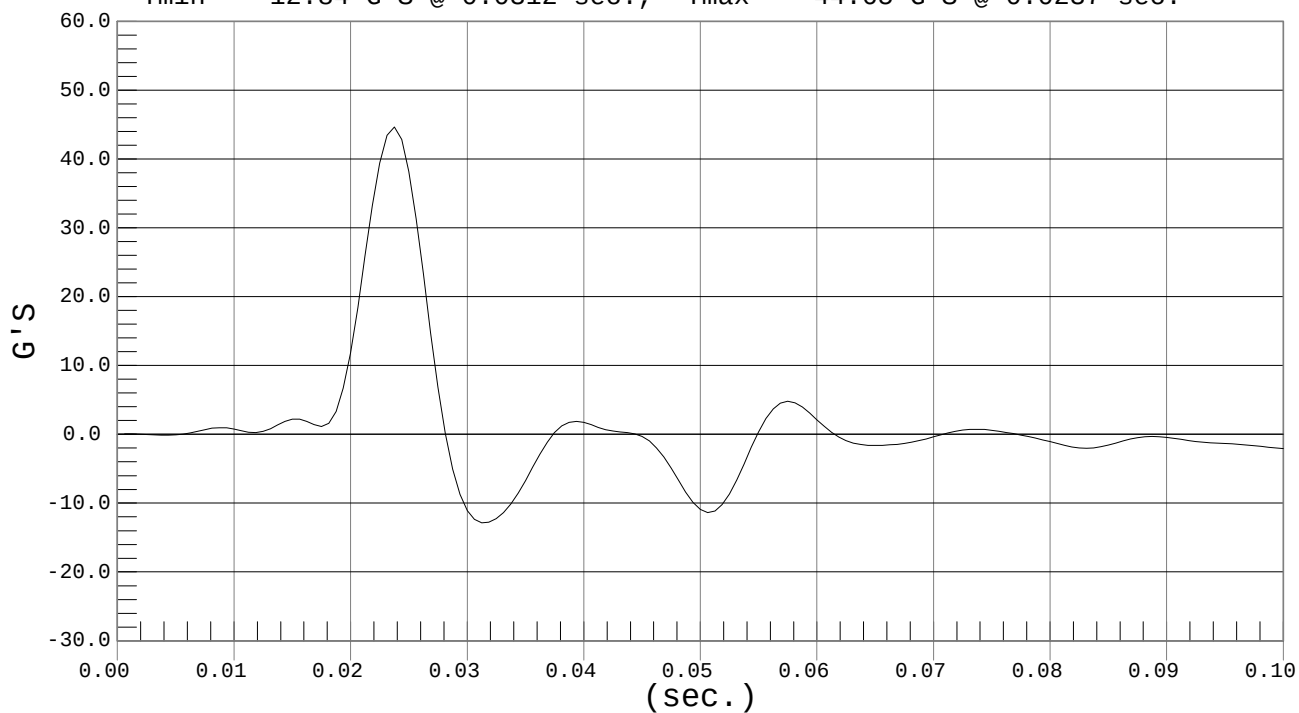


LOWER RIB ACCELERATION

Test Desc.: Thorax Impact
Component: Dummy #037

Test Date: 01-15-02
Speed: 14.1 fps, 4.28 M/s

Ymin = -12.84 G'S @ 0.0312 sec., Ymax = 44.65 G'S @ 0.0237 sec.



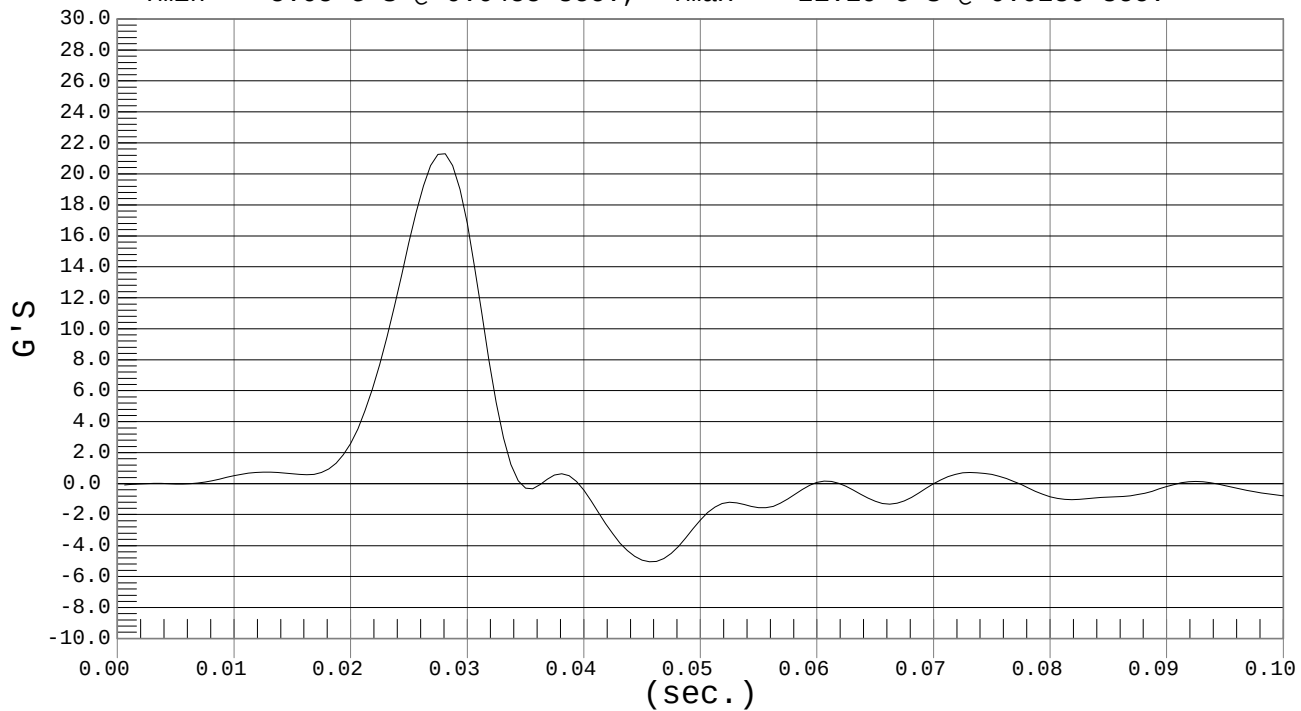


LOWER SPINE ACCELERATION

Test Desc.: Thorax Impact
Component: Dummy #037

Test Date: 01-15-02
Speed: 14.1 fps, 4.28 M/s

Ymin = -5.05 G'S @ 0.0455 sec., Ymax = 21.29 G'S @ 0.0280 sec.



SID Calibration Data Sheet
Side Impact Dummy
Pelvis Impact Calibration

ATD Serial No.: 37

Test I.D.: D02053

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	22.2	Pass
Laboratory Relative Humidity	%	10 – 70	28	Pass
Probe Speed	m/s	4.27 – 4.33	4.29	Pass
Pelvis Acceleration	G's	40 – 60	48	Pass
Overall Test Results			Pass	

Laboratory Technician

1/15/02
Test Date

Approved By

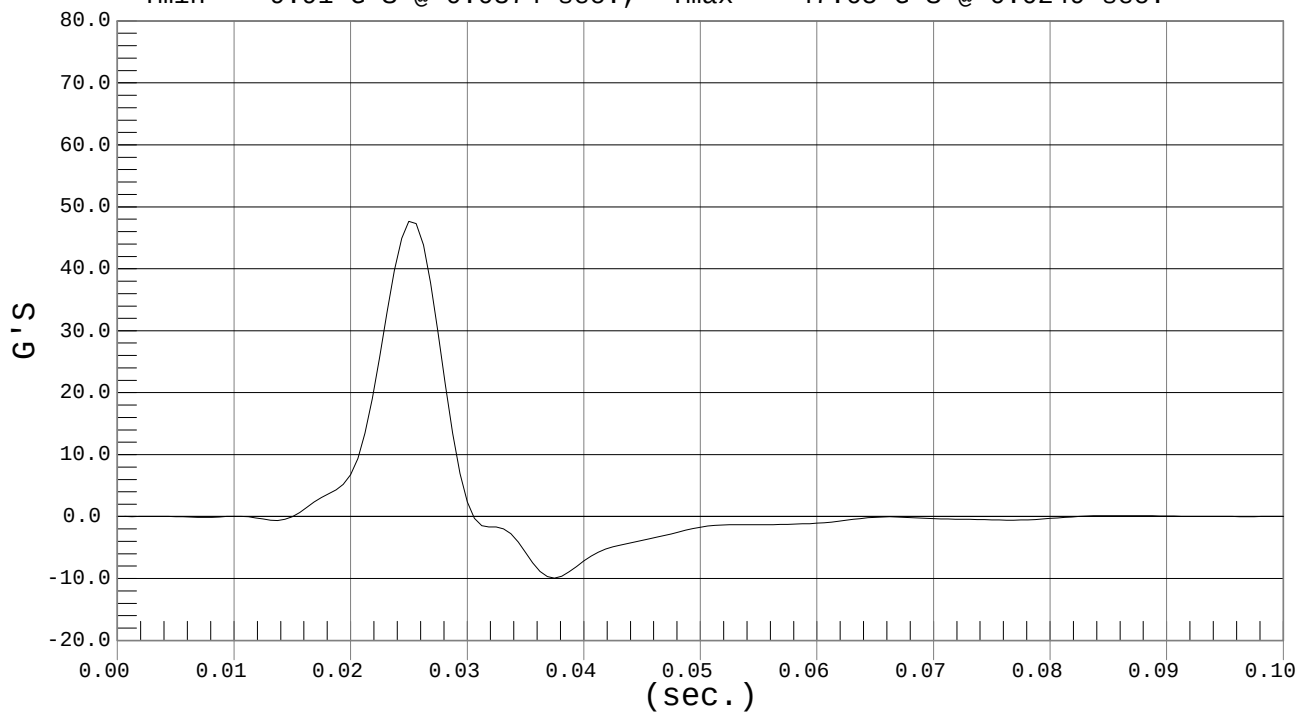


PELVIS ACCELERATION

Test Desc.: Pelvis Impact
Component: Dummy #037

Test Date: 01-15-02
Speed: 14.1 fps, 4.29 M/s

Ymin = -9.91 G'S @ 0.0374 sec., Ymax = 47.65 G'S @ 0.0249 sec.



SID Calibration Data Sheet
Side Impact Dummy
Abdominal Compression Calibration (Preload = 10 lbs)

ATD Serial No.: 37

Test I.D.: D02054

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	22.6	Pass
Laboratory Relative Humidity	%	10 – 70	25	Pass
Force @ 12.7	mm	104 – 162	135	Pass
Force @ 19	mm	163 – 222	185	Pass
Force @ 25.4	mm	222 – 280	244	Pass
Force @ 33	mm	325 - 391	347	Pass
Overall Test Results				Pass

Laboratory Technician

1/14/02
Test Date

Approved By

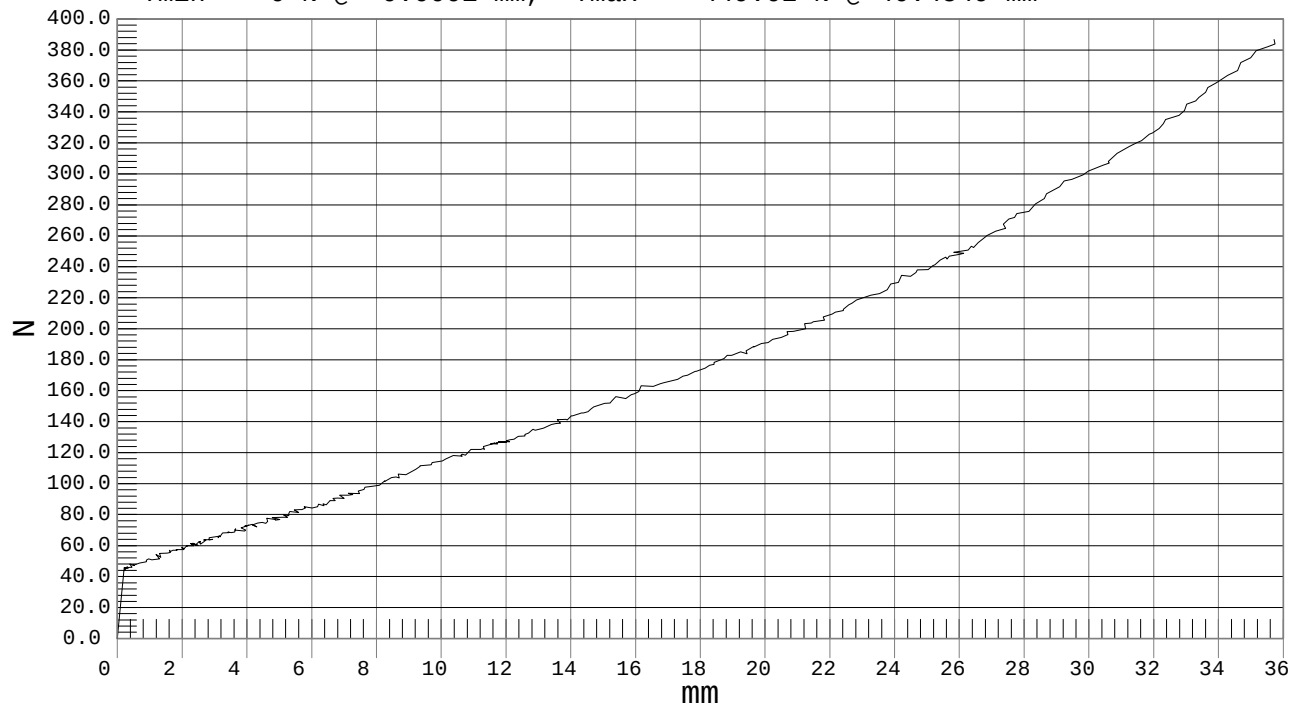


ABDOMEN COMPRESSION

Test Desc.: ABDOMEN COMPRESSION
Component: DUMMY # 037

Test Date: 01-14-02
Speed: 0.0 fps, 0.00 M/s

Ymin = 0 N @ -0.0001 mm, Ymax = 449.02 N @ 40.4549 mm



SID Calibration Data Sheet
Side Impact Dummy
Lumbar Flexion Calibration

ATD Serial No.: 37

Test I.D.: D02055

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	22.5	Pass
Laboratory Relative Humidity	%	10 – 70	27	Pass
Force @ 0	mm	0 – 26.7	0	Pass
Force @ 20	mm	97.9 – 151.2	118.7	Pass
Force @ 30	mm	151.2 – 204.6	182.5	Pass
Force @ 40	mm	204.6 – 258.0	254.3	Pass
Return Angle	Degrees	12° maximum	4	Pass
Overall Test Results				Pass

Laboratory Technician

1/14/02
Test Date

Approved By

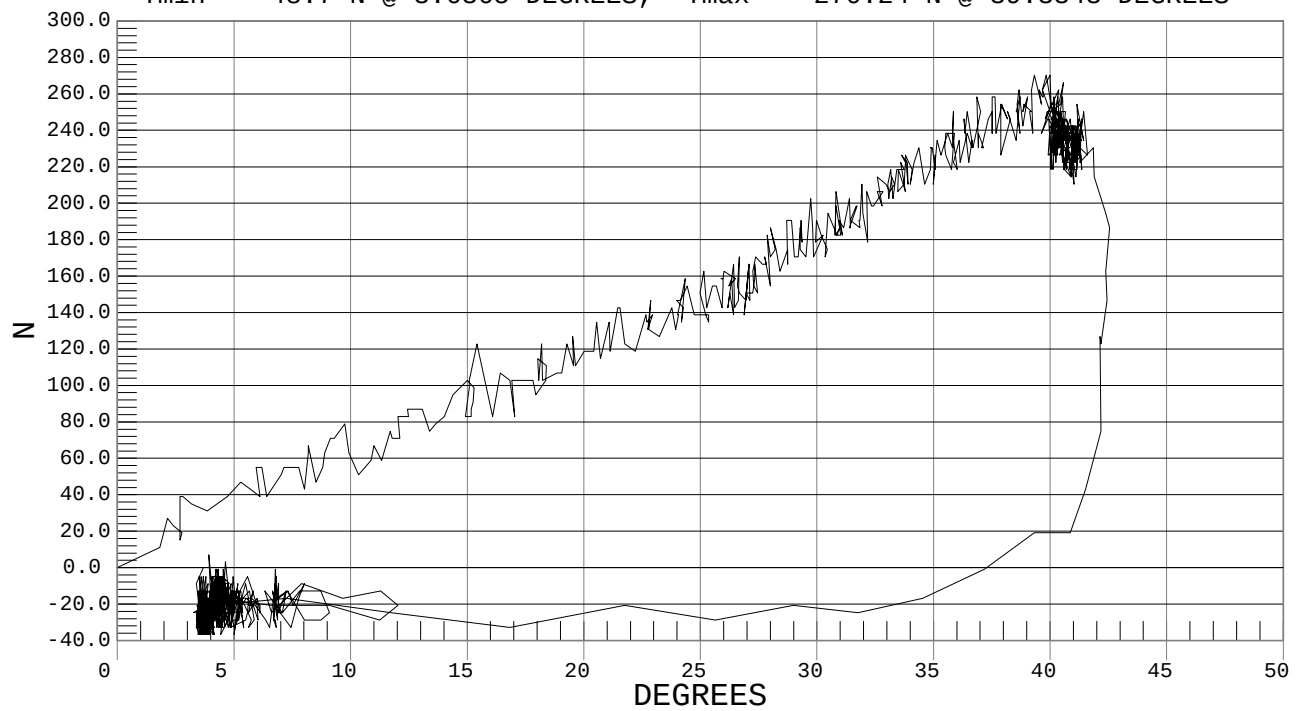


LUMBAR FLEXION

Test Desc.: LUMBAR FLEXION
Component: DUMMY # 037

Test Date: 01-14-02
Speed: 0.0 fps, 0.00 M/s

Ymin = -48.7 N @ 3.6365 DEGREES, Ymax = 270.24 N @ 39.3343 DEGREES



SID Calibration Data Sheet
Side Impact Dummy
Inspection Checklist

ATD Serial No.: 37

Test Part	Items Checked	Result
Skin	Visual inspection	OK
Head	Visual, ballast, accelerometer mount	OK
Neck	Visual	OK
Spine Box	Visual, ballast, weldment, accelerometer mount	OK
Rib Cage	Visual, measure	OK
Sternum	Visual	OK
Lumbar Spine	Visual	OK
Abdomen	Visual	OK
Pelvis	Visual, palpate, accelerometer mount	OK
Upper Legs	Visual	OK
Knees	Visual	OK
Lower Legs	Visual, range of motion	OK
Ankles	Visual, range of motion	OK
Feet	Visual, range of motion	OK
Joints	1 to 2 g range	OK
Other		OK

Notes (include component/problem/section/reason):

Laboratory Technician

1/15/02
Test Date

Approved By

APPENDIX D

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

DUMMY AND VEHICLE CALIBRATION DATA

	INSTRUMENTS FOR DRIVER DUMMY NO. 36		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Rib Y	AKAC4	Endevco	1/7/02
Lower Rib Y	J10420	Endevco	1/7/02
Lower Spine Y	AP1Y8	Endevco	1/7/02
Pelvis Y	AP138	Endevco	1/7/02
Upper Rib Redundant Y	J13642	Endevco	1/7/02
Lower Rib Redundant Y	AKAF2	Endevco	1/7/02
Lower Spine Redundant Y	AMT78	Endevco	1/7/02
Pelvis Redundant Y	AP0G2	Endevco	1/7/02
Head Center of Gravity X	J21970	Endevco	1/7/02
Head Center of Gravity Y	J21691	Endevco	1/7/02
Head Center of Gravity Z	J22033	Endevco	1/7/02

	INSTRUMENTS FOR PASSENGER DUMMY NO. 37		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Rib Y	J12471	Endevco	1/7/02
Lower Rib Y	AJ420	Endevco	1/7/02
Lower Spine Y	ALDY8	Endevco	1/7/02
Pelvis Y	J13851	Endevco	1/7/02
Upper Rib Redundant Y	J12423	Endevco	1/7/02
Lower Rib Redundant Y	AMTA3	Endevco	1/7/02
Lower Spine Redundant Y	AP0E1	Endevco	1/7/02
Pelvis Redundant Y	J13658	Endevco	1/7/02
Head Center of Gravity X	ALB87	Endevco	1/7/02
Head Center of Gravity Y	AHRP5	Endevco	1/7/02
Head Center of Gravity Z	AJ9T6	Endevco	1/7/02

VEHICLE INSTRUMENT CALIBRATION

	VEHICLE ACCELEROMETERS		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Moving Barrier CG X	H14-N05	Entran	9/12/01
Moving Barrier CG Y	A08-A08	Entran	11/2/01
Moving Barrier CG Z	K16-X08	Entran	10/1/01
Moving Barrier Rear Axle X	A08-A05	Entran	8/21/01
Moving Barrier Rear Axle Y	D11-F16	Entran	11/2/01
Left Mid A-Post Y	F07-A14	Entran	8/8/01
Left Lower A-Post Y	K21-N17	Entran	12/17/01
Left Mid B-Post Y	I12-F15	Entran	10/29/01
Left Lower B-Post Y	H02-J01	Entran	11/2/01
Rear Floorpan Above Axle X	K21-N11	Entran	12/11/01
Rear Floorpan Above Axle Y	K21-N10	Entran	12/11/01
Rear Floorpan Above Axle Z	K21-N09	Entran	12/11/01
Driver Seat Track Y	G13-F15	Entran	8/8/01
Right Side Sill at Front Seat X	K21-N08	Entran	12/11/01
Right Side Sill at Front Seat Y	K21-N07	Entran	12/11/01
Right Side Sill at Front Seat Z	K21-N06	Entran	12/11/01
Right Side Sill at Rear Seat X	K21-N05	Entran	12/11/01
Right Side Sill at Rear Seat Y	K21-N04	Entran	12/11/01
Right Side Sill at Rear Seat Z	K21-N03	Entran	12/11/01
Left Side Sill at Front Seat Y	K21-N01	Entran	12/11/01
Left Side Sill at Rear Seat Y	K21-N02	Entran	12/11/02
Right Rear Occupant Compartment Y	K21-N14	Entran	12/11/01
Vehicle CG X	G08-B04	Entran	8/21/01
Vehicle CG Y	A08-A09	Entran	8/21/01
Vehicle CG Z	H07-A11	Entran	8/21/01

Note: All Endevco accelerometers are Model No. 7264-2000
All Entran accelerometers are Model No. EGE-72