REPORT NUMBER: 214D-MGA-2002-005

SAFETY COMPLIANCE TESTING FOR FMVSS 214
SIDE IMPACT PROTECTION
INDICANT

Ford Motor Company
2002 Ford Explorer 4 Door SUV
NHTSA NUMBER: C20206

PREPARED BY:
MGA RESEARCH CORPORATION
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BURLINGTON, WI 53105

February 7, 2002

FINAL REPORT

PREPARED FOR:
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NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF VEHICLE SAFETY COMPLIANCE
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This final test report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, in response to Contract Number DTNH22-97-C-11033.

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FINAL REPORT ACCEPTED BY:

_____
COTR, Side Impact

_____
Date of Acceptance

Technical Report Documentation Page

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7. Author(s) Chris Havens, Project Engineer		*8. Performing Organization Report No.* 214D-MGA-2002-005	
9. Performing Organization Name and Address MGA Research Corporation 5000 Warren Road Burlington, WI 53105		*10. Work Unit No.* *11. Contract or Grant No.* DTNH22-97-C-11033	
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Vehicle Safety Compliance 400 Seventh St. Room 6111, S.W. Washington, D.C. 20590		*13. Type of Report and Period Covered* Final Report; 2/7/02 to 2/18/02 *14. Sponsoring Agency Code* NSA-30	
15. Supplementary Notes			

16. Abstract

A 55/28 km/h 90° Moving Deformable Barrier INDICANT Compliance Test was conducted on the 2002 Ford Explorer 4 Door SUV 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 February 7, 2002

The impact velocity of the Moving Deformable Barrier (MDB) was 62.7 km/h, and the ambient temperature at the struck side (driver's) of the vehicle was 20.0°C. The target vehicle's maximum post test static crush was 307 mm at level 3. The test vehicle's occupant performance is as follows:

	DRIVER	PASS.
Left Upper Rib (LUR) Accel., g	33	40
Left Lower Rib (LLR) Accel., g	35	32
Lower Spine (T_{12}) Accel., g	34	29
Thoracic Trauma Index (TTI)	35	35
Pelvis (PEV) Accel., g	54	34
HIC	93	175

The front door on the struck side of the vehicle did not separate from the body at the hinges, the door opened at the latch during the side impact event. The rear door 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.

17. Key Words Compliance Testing FMVSS 214D Side Impact Protection Side Impact Dummy (SID) New Car Assessment Program (NCAP)		*18. Distribution Statement* Copies of this report are available from: National Highway Traffic Safety Adm. Technical Ref. Division, Room 5108 (NAD-52) 400 Seventh Street, S.W. Washington, D.C. 20590	
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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 Ford Explorer 4 Door SUV manufactured by Ford Motor Company.

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 Ford Explorer 4 Door SUV 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 62.7 km/h. The specified impact velocity range is from 61.1 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 2297.9 kg and the test weight of the MDB was 1362.0 kg. The test was conducted at MGA Research Corporation in Burlington, Wisconsin, on February 7, 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 (SIDs) can be found in Appendix A. Two 50th percentile adult male SID's 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 fourteen (14) 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 primary and redundant).

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 307 mm at level 3, 1350 mm rearward of the left vertical impact point. The driver and passenger SID's, Serial Nos. 37 and 36 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	35	35
Peak Pelvic G's (PEV)	G's	54	34
Head Injury Criteria (HIC)	none	93	175

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
Midrear of Left Front Door
Left Front Door Upper Centerline
Midrear of Left Rear door
Left Rear Door Upper Centerline

SECTION 3

SIDE IMPACT DUMMY (SID) AND VEHICLE TEST DATA

Test Vehicle: 2002/Ford/Explorer/SUV NHTSA No. C20206
Test Program: FMVSS 214 Indicant Side Impact Test Date: 2/7/02

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	=(tf -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/Ford/Explorer/SUV NHTSA No. C20206
Test Program: FMVSS 214 Indicant Side Impact Test Date: 2/7/02

TEST VEHICLE INFORMATION

Make	Ford
Model	Explorer
Body Style	SUV
NHTSA No.	C20206
VIN	1FMZU72E22ZB11690
Color	Maroon
Delivery Date	January 30, 2002
Odometer Reading (mile)	42
Dealer	CarMax
Transmission	Automatic
Final Drive	4 WD
Number of Cylinders	6
Engine Displacement (L)	4.0
Engine Placement	Longitudinal

TEST VEHICLE OPTIONS

Front Airbag	Yes
Side Airbags	No
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/CD	Yes
Anti-theft System	Yes
Cruise Control	Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Ford Motor Company
Date of Manufacture	8/01

GVWR (kg)	2503
GAWR Front (kg)	1240
GAWR Rear (kg)	1360

DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	207	241
Cold Pressure (kPa)	207	241
Recommended Tire Size	235/70R16	235/70R16
Tire Size on Vehicle	235/70R16	235/70R16
Tire Manufacturer	Michelin	Michelin

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench	-	
Number Of Occupants x 68.04 kg.	2	3	-	340.2
Capacity Wt. (VCW) (kg)				494.4
Cargo Wt. (RCLW) (kg)				154.2

Note: RCLW shall not exceed 136.1 kg for LTV's

DATA SHEET NO. 1... (continued)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2002/Ford/Explorer/SUV NHTSA No. C20206
Test Program: FMVSS 214 Indicant Side Impact Test Date: 2/7/02

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	539.8	469.9		580.6	610.5	
Right	kg	531.2	468.6		540.7	566.1	
Ratio	%	53.3	46.7		48.8	51.2	
Totals	kg	1071.0	938.5	2009.5	1121.3	1176.6	2297.9

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	2009.5
Weight of 2 P572E ATDs	kg	161.5
Rated Cargo/Luggage Weight (RCLW)	kg	136.1
Calculated Vehicle Target Weight (TVTW)	kg	2307.1

- 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	837	837	864	861	1349
As Tested	mm	833	835	835	839	1479
Fully Loaded	mm	829	835	835	839	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	2889
Total Vehicle Length at Left Side	mm	4020
Total Vehicle Length at Centerline	mm	4836
Total Vehicle Length at Right Side	mm	4020
Total Vehicle Width	mm	1821
Weight of Ballast in Cargo Area	kg	90.7
Amount of Stoddard Solvent in Fuel Tank	liters	80.5

TEST VEHICLE VERTICAL IMPACT LINE DATA

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	2889
Target Impact Point Aft of Front Axle	mm	505
Actual Impact Point Aft of Front Axle	mm	514

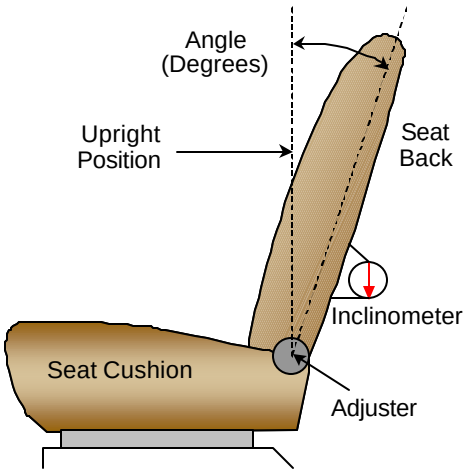
DATA SHEET NO. 1…(continued)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle:	2002/Ford/Explorer/SUV	NHTSA No.	C20206
Test Program:	FMVSS 214 Indicant Side Impact	Test Date:	2/7/02

NORMAL DESIGN RIDING POSITION

The driver seat is positioned to the manufacturer's designated angle. The procedure for the seat is as follows: 19 deg – remove seat back panel and position inclinometer 11.5" above the back pivot point on the rear outboard seat frame. The rear passenger is fixed no adjustments can be made.



FRONT SEAT ASSEMBLY

Driver seat back angle: 19°

Passenger seat back angle: N/A

SEAT FORE/AFT POSITIONS

The driver's seat is manually operated and the rear passenger seat has no adjustments. 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:	26 detents
Passenger seat fore/aft total travel:	Non-adjustable
Driver seat fore/aft position:	14th detent from forwardmost
Passenger seat fore/aft position:	N/A

SEAT BELT UPPER ANCHORAGE

The test vehicle is equipped with adjustable "D" ring anchorage for the driver's seat position. There are 5 positions or detents, with the lower most position numbered "1". The driver's "D" ring anchorage is placed in position 3 or middle position.

DATA SHEET NO. 1...(continued)

TEST VEHICLE INFORMATION

Test Vehicle: 2002/Ford/Explorer/SUV NHTSA No. C20206
Test Program: FMVSS 214 Indicant Side Impact Test Date: 2/7/02

FUEL TANK CAPACITY DATA

The "Usable Capacity" of the standard equipment fuel tank is: 85.2 liters

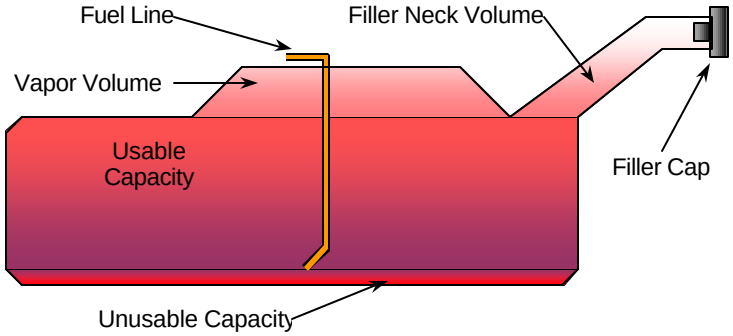
The "Usable Capacity" of any optional equipment fuel tank is: N/A liters

92-94% of "Usable Capacity" for certification to FMVSS 301 requirements: 78.3 to 80.2 liters

Actual amount of Stoddard solvent added to vehicle for certification test: 80.5 liters

Note: Actual amount of Stoddard is 0.3L greater than 94%.

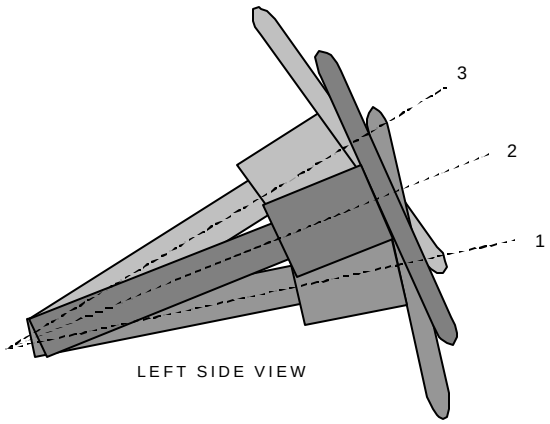
The test vehicle is equipped with an electric fuel pump. The fuel filler door is located on the right rear fender.



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. An 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: 17.4

Geometric center, position 2: 20.9°

Uppermost, position 3: 24.5

DATA SHEET NO. 2

TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle: 2002/Ford/Explorer/SUV NHTSA No. C20206
Test Program: FMVSS 214 Indicant Side Impact Test Date: 2/7/02

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	539.8	469.9		580.6	610.5	
Right	kg	531.2	468.6		540.7	566.1	
Weight Ratio	%	53.2	46.7		48.8	51.2	
Totals	kg	1071.0	938.5	2009.5	1121.3	1176.6	2297.9

MAXIMUM EXTERIOR STATIC CRUSH

Level	Measured Parameter	Units	Maximum Crush	Above Ground
Level 1	Sill Top Height	mm	231	399
Level 2	Occupant H-Point	mm	291	698
Level 3	Mid Door	mm	307	819
Level 4	Window Sill	mm	280	1079
Level 5	Window Top	mm	33	1614
Level 3	Maximum Penetration	mm	307	819

INSTRUMENTATION

Driver SID Accelerometers	14
Passenger SID Accelerometers	14
Vehicle Structure Accelerometers	21
MDB Accelerometers	5
Total	54

DATA SHEET NO. 3

MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS

Test Vehicle: 2002/Ford/Explorer/SUV NHTSA No. C20206
Test Program: FMVSS 214 Indicant Side Impact Test Date: 2/7/02

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	61.1 to 62.7	62.7
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	NVD
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
Level	Description	Height	Distance	Direction	
1	Center of Bumper (mm)	432	800	Right	230
2	Top of Bumper (mm)	533	800	Left	174
3	Mid Level (mm)	686	800	Left	172
4	Top of Stack (mm)	813	800	Left	200

MDB INSTRUMENTATION AND CAMERAS

Accelerometers	5
Contact Switches	2
High Speed Cameras	2

DATA SHEET NO. 4

POST TEST OBSERVATIONS

Test Vehicle: 2002/Ford/Explorer/SUV NHTSA No. C20206
Test Program: FMVSS 214 Indicant Side Impact Test Date: 2/7/02

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Front Seat SID	Rear Seat SID
Dummy Type / Serial No.	SID / 37	SID / 36
Head Contact	None	C-post, window frame
Upper Torso Contact	rear of door above armrest	rear of door armrest
Lower Torso Contact	rear of door below armrest	rear of door below armrest
Left Knee Contact	mid door below armrest	mid door below armrest
Right Knee Contact	left knee	left knee

POST TEST DOOR OPENING AND SEAT TRACK INFORMATION

Description	Front	Rear
Left Side Door Opening	Door came unlatched during event	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	left side
Window Damage	left front
Other Notable Effects	Door came unlatched during event, would require force to open further

AIRBAG DEPLOYMENT

	Driver	Front Passenger	Rear Passenger
Front	yes	yes	none
Side	none	none	none

MDB LEFT EDGE IMPACT POINT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 50	9 rearward
Vertical Offset	mm	+/-20	6 up

SECTION 4

OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 5

SID INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2002/Ford/Explorer/SUV NHTSA No. C20206
Test Program: FMVSS 214 Indicant Side Impact Test Date: 2/7/02

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	32.8	49	7.7	100	40.3	61	9.5	119
Upper Rib (LUR)(R)	Y	G's	34.6	49	7.7	100	40.5	61	9.1	119
Lower Rib (LLR)	Y	G's	34.9	43	6.5	101	32.3	51	2.9	118
Lower Rib (LLR) (R)	Y	G's	35.3	42	8.1	99	32.3	51	3.5	118
Lower Spine (T_{12})	Y	G's	34.4	44	5.8	65	29.3	51	5.8	117
Lower Spine (T_{12}) (R)	Y	G's	33.7	44	5.6	65	29.6	50	6.2	117
Pelvis (PEV)	Y	G's	54.2	33	3.6	55	34.2	42	12.2	76
Pelvis (PEV) (R)	Y	G's	54.5	33	3.4	55	33.5	43	12.3	76

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

Location	Driver				Passenger			
	LLR	T_{12}	TTI(g)	PEV(g)	LUR	T_{12}	TTI(g)	PEV(g
Rib, Spine, and Pelvis	34.9	34.4	35	54.2	40.3	29.3	35	34.2
Rib, Spine, and Pelvis (R)	35.3	33.7	35	54.5	40.5	29.6	35	33.5

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	5.1	38	13.3	90	8.7	62	53.4	94
Head CG	Y	G's	22.3	96	6.9	45	36.1	65	10.7	78
Head CG	Z	G's	33.5	74	3.4	26	66.4	95	14.0	76
Head CG Resultant		G's	34.0	72			85.7	94		

HEAD INJURY CRITERIA (SAE CLASS 1000 Filtered)

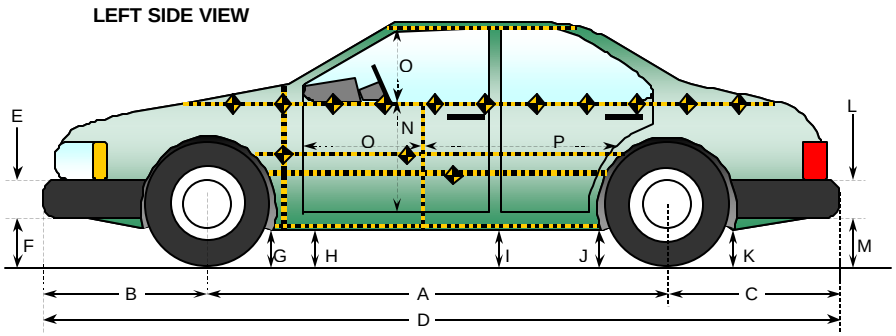
Location	Driver				Passenger			
	HIC	T^1	T^2	Avg G's	HIC	T^1	T^2	Avg G's
Head CG	93	64.0	100.0	23.2	175	88.0	98.8	48.3

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/Ford/Explorer/SUV NHTSA No. C20206
Test Program: FMVSS 214 Indicant Side Impact Test Date: 2/7/02



All Measurements in mm

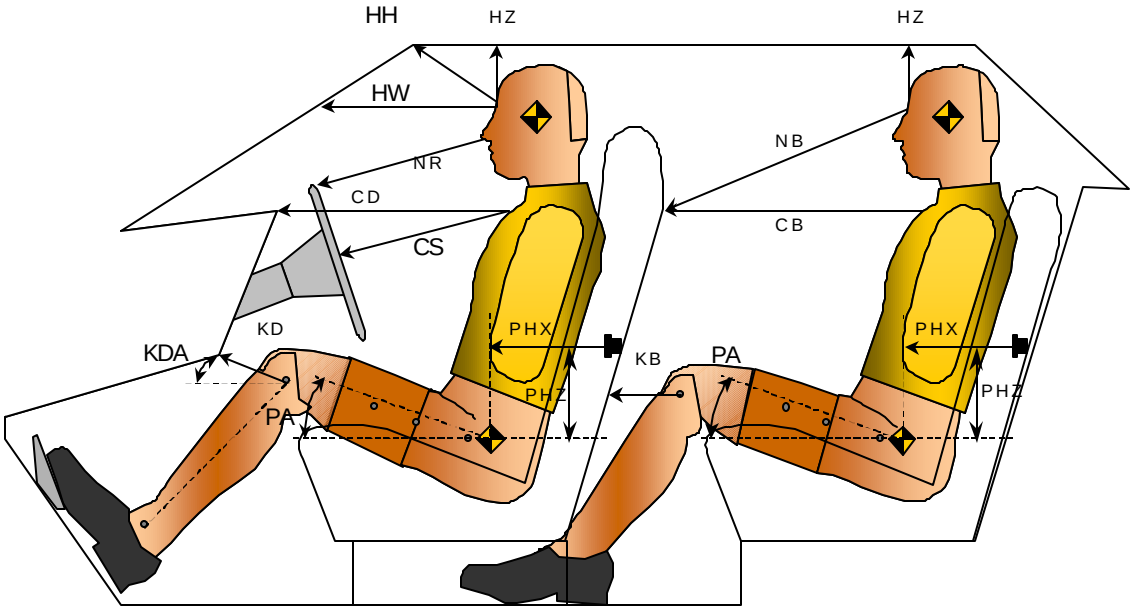
Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2889	2874	-15
B	Front Axle to FSOV	798	609	-189
C	Rear Axle to RSOV	1120	909	-211
D	Total Length at Centerline*	4836	4392	-415
E	Front Bumper Thickness	83	83	0
F	Front Bumper Bottom to Ground	659	674	15
G	Sill Height at Front Wheel Well	333	343	10
H	Sill Height at Front Door Leading Edge	229	231	2
I	Sill Height at "B" Pillar	340	338	-2
J1	Sill Height at Rear Wheel Well	346	351	5
J2	Pinch Weld Height at Rear Wheel Well	235	244	9
K	Sill Height Aft of Rear Wheel Well	404	398	-6
L	Rear Bumper Thickness	76	76	0
M	Rear Bumper Bottom to Ground	520	539	19
N	Sill Height to Window Bottom Sill	732	693	-39
O	Front Door Leading Edge to Impact CL	752	713	-39
P	Rear Door Trailing Edge to Impact CL	1209	1134	-75
Q	Front Window Opening	506	502	-4
R	Right Side Length	4020	4026	6
S	Left Side Length	4020	3968	-52
T	Vehicle Width at "B" Post	1821	1587	-234

* - Note front bumper separated during event by cart

DATA SHEET NO. 7

SID LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2002/Ford/Explorer/SUV NHTSA No. C20206
Test Program: FMVSS 214 Indicant Side Impact Test Date: 2/7/02

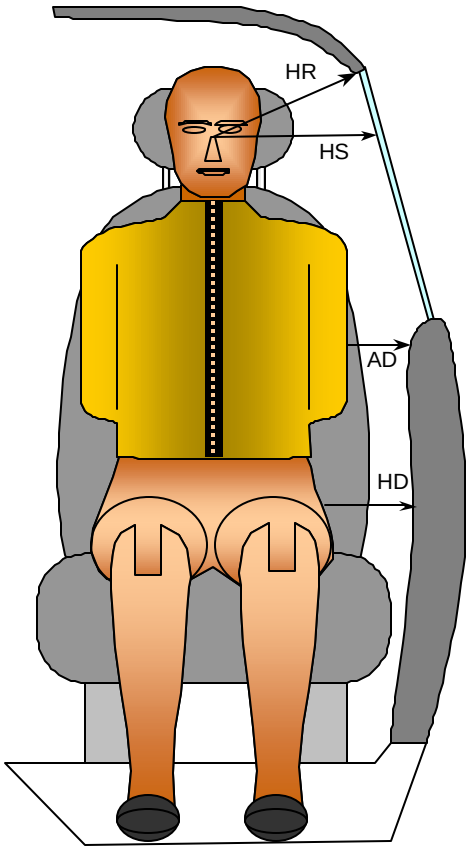


Driver Code	Pass. Code	Measurement Description	Driver 37		Passenger 36	
			Length(mm)	Angle(°)	Length(mm)	Angle(°)
HH		Head to Header	396			
HW		Head to Windshield	544			
HZ	HZ	Head to Roof	179		167	
NR	NB	Nose to Rim/Nose to Seatback	400		687	
CD	CB	Chest to Dash or Seatback	512		613	
CS		Chest to Steering Wheel	307			
KDL	KBL	Left Knee to Dash or Seatback	208	0	248	0
KDR	KBR	Right Knee to Dash or Seatback	172	0	268	0
PA	PA	Pelvic Angle		23.2		24.2
PHX	PHX	H-Point to Striker (X-Axis)	204		279	
PHZ	PHZ	H-Point to Striker (Z-Axis)	39		158	

DATA SHEET NO. 8

SID LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2002/Ford/Explorer/SUV NHTSA No. C20206
Test Program: FMVSS 214 Indicant Side Impact Test Date: 2/7/02



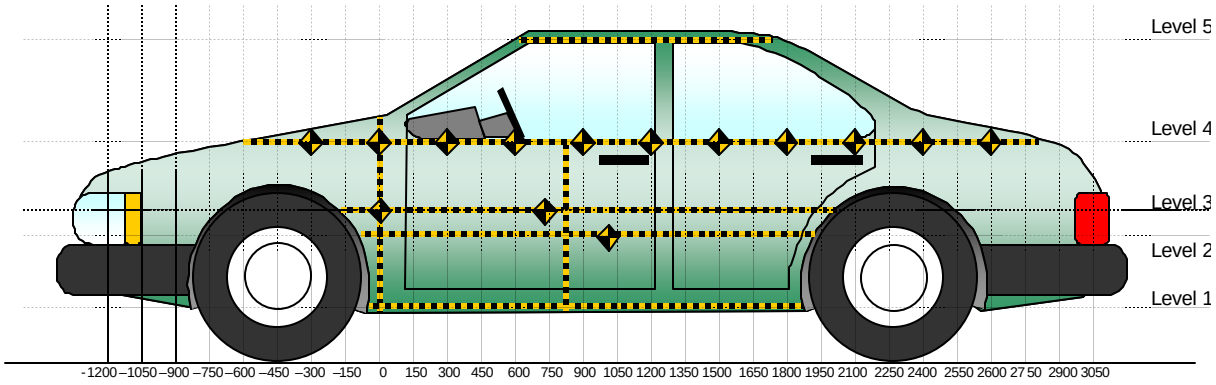
FRONT VIEW OF DUMMY

Code	Measurement Description	Units	Driver 37	Passenger 36
HR	Head to Side Header	mm	209	182
HS	Head to Side Window	mm	314	272
AD	Arm to Door	mm	109	72
HD	H-Point to Door	mm	134	97

DATA SHEET NO. 9

VEHICLE SIDE MEASUREMENTS

Test Vehicle: 2002/Ford/Explorer/SUV NHTSA No. C20206
Test Program: FMVSS 214 Indicant Side Impact Test Date: 2/7/02



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	1614
4	Window Sill	1079
3	Occupant H-point	819
2	Mid-Door	698
1	Sill Top	399

DATA SHEET NO. 10

VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2002/Ford/Explorer/SUV NHTSA No. C20206
Test Program: FMVSS 214 Indicant Side Impact Test Date: 2/7/02

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-1050															
-900				285					298					13	
-750				270					286					16	
-600				260					283					23	
-450				249					276					27	
-300				243					276					33	
-150			193	238				244	276				51	38	
0		206	200	235			238	263	280			32	63	45	
150	237	206	200	234		435	371	357	286		198	165	157	52	
300	235	201	197	235		440	421	406	280		205	220	209	45	
450	235	202	197	232		430	414	400	274		195	212	203	42	
600	235	201	196	233		411	408	389	272		176	207	193	39	
750	234	201	195	230	453	396	392	385	271	302	162	191	190	41	-151
900	235	201	195	231	453	379	373	381	273	292	144	172	186	42	-161
1050	238	201	194	232	453	354	360	372	277	282	116	159	178	45	-171
1200	237	200	194	232	454	469	457	465	512	276	232	257	271	280	-178
1350	240	201	195	233	455	471	486	502	466	488	231	285	307	233	33
1500	242	202	196	234	457	466	491	489	419	456	224	289	293	185	-1
1650	245	205	199	237	459	455	496	490	374	423	210	291	291	137	-36
1800	246	206	201	238	461	408	455	452	326	392	162	249	251	88	-69
1950		195	202	240	463		334	372	295	364		139	170	55	-99
2100				245	464				265	494				20	30
2250				245	463				305	490				60	27
2400				250	460				299	492				49	32
2550				253	462				295	490				42	28
2700			203	256	468			239	291	495			36	35	27
2850		216	218	262	475		246	247	290	503		30	29	28	28
3000		223	222	268			249	247	287			26	25	19	
3150				280					296					16	
3300				340					350					10	

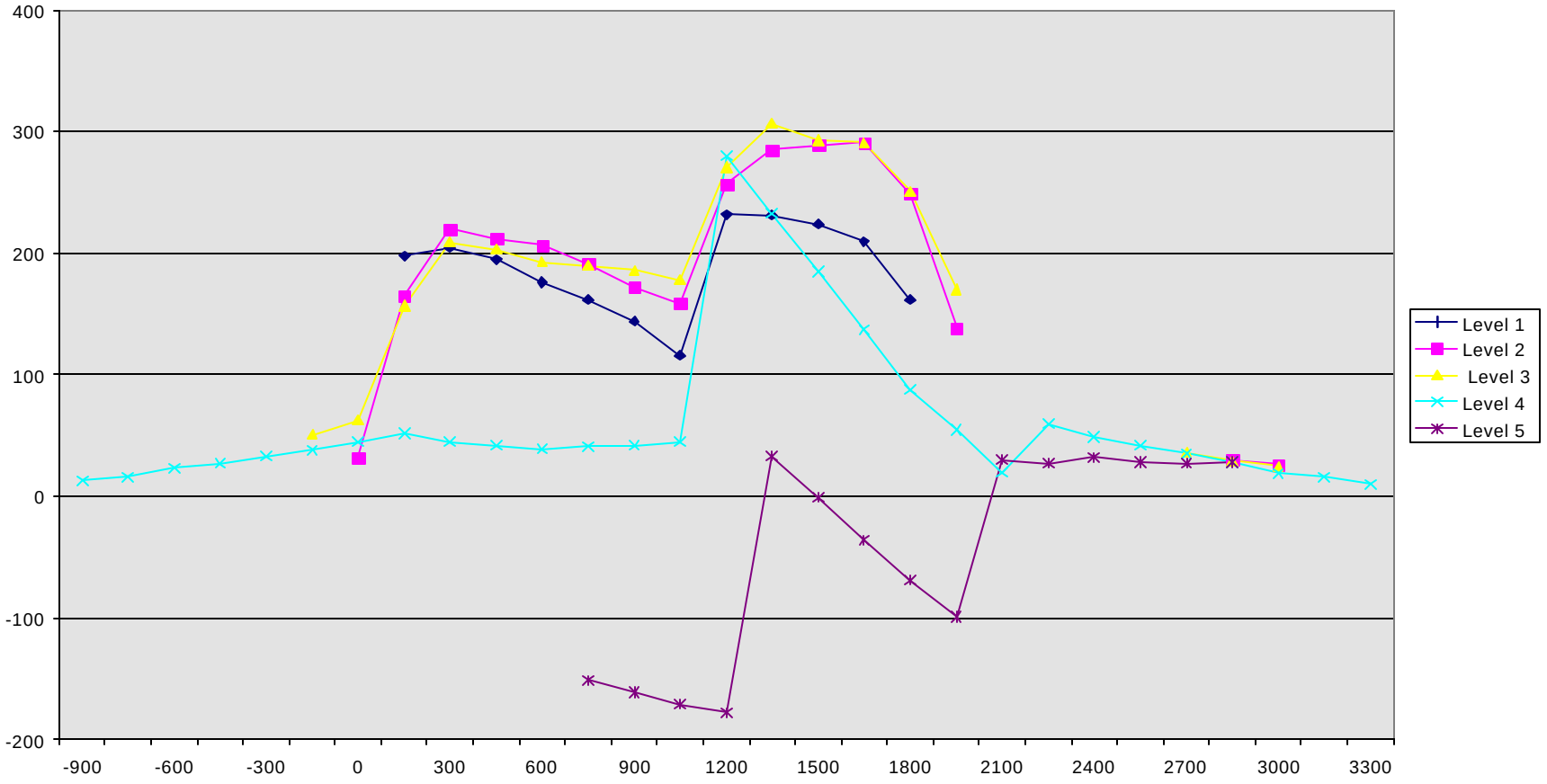
Reference plane is parallel to test vehicle longitudinal centerline.

Given dimensions = Reference plane to car body

DATA SHEET NO. 10...(continued)

VEHICLE EXTERIOR CRUSH PROFILES

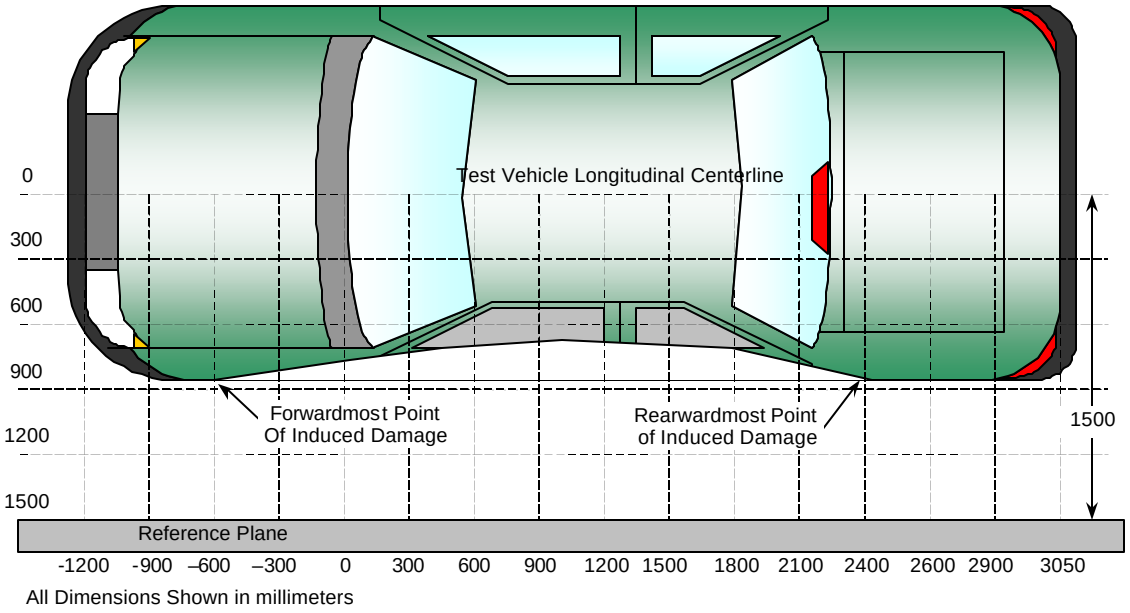
Test Vehicle: 2002/Ford/Explorer/SUV NHTSA No. C20206
Test Program: FMVSS 214 Indicant Side Impact Test Date: 2/7/02



DATA SHEET NO. 11

VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2002/Ford/Explorer/SUV NHTSA No. C20206
Test Program: FMVSS 214 Indicant Side Impact Test Date: 2/7/02



TOP VIEW

Damage Profile Distances

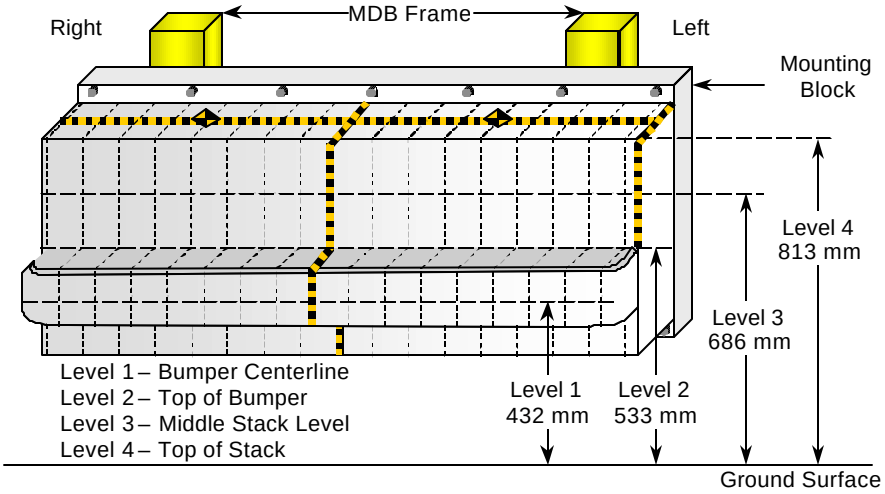
DPD	Distance from Impact Point in mm	Level	Pre-Test (mm)	Post-Test (mm)	Max Static Crush (mm)
1	3150 mm	4	280	296	16
2	2350 mm	4	246	302	56
3	1509 mm	3	196	521	325
4	703 mm	1	235	431	196
5	-97 mm	3	200	252	52
6	-900 mm	4	285	298	13

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/Ford/Explorer/SUV NHTSA No. C20206
Test Program: FMVSS 214 Indicant Side Impact Test Date: 2/7/02



DEFORMABLE BARRIER STATIC CRUSH

Stack Level	Distance Right of Center								C_L	Distance Left of Center							
	800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800
1	230	224	214	209	206	199	199	196	185	176	176	165	165	160	160	166	168
2	174	162	159	156	153	147	132	141	129	125	122	117	113	109	105	106	129
3	112	91	85	83	89	107	109	89	81	74	72	72	75	82	92	107	172
4	129	91	74	72	80	107	99	78	67	75	90	101	107	111	124	141	200

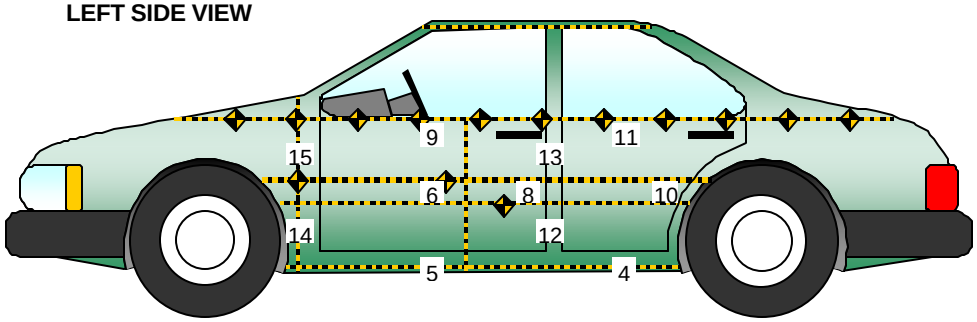
All Dimensions in mm

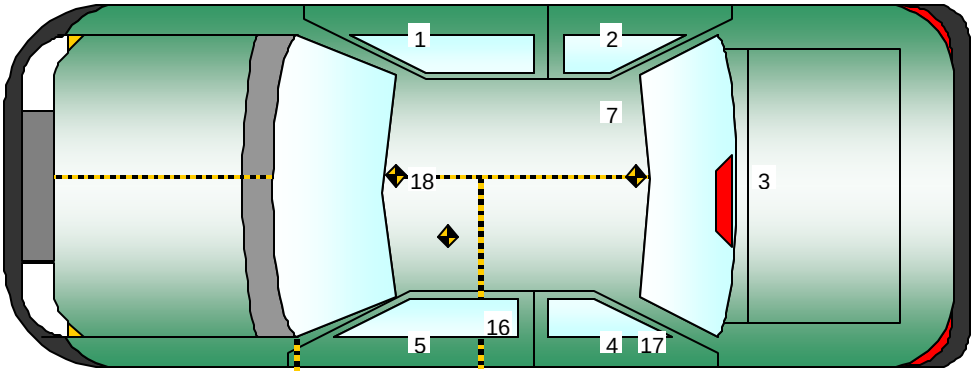
DATA SHEET NO. 13

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Test Vehicle: 2002/Ford/Explorer/SUV NHTSA No. C20206
Test Program: FMVSS 214 Indicant Side Impact Test Date: 2/7/02

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/Ford/Explorer/SUV NHTSA No. C20206
Test Program: FMVSS 214 Indicant Side Impact Test Date: 2/7/02

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	2472	634	-410	X	2.9	49	7.0	13
					Y	21.7	42	4.2	63
					Z	4.1	86	13.2	24
					RES	22.0	42		
2	Right Sill at Rear Seat	1558	634	-438	X	4.2	47	4.3	13
					Y	24.3	16	3.8	23
					Z	5.5	8	21.2	25
					RES	24.8	16		
3	Rear Floorpan Above Axle	1733	0	-655	X	15.7	27	18.5	73
					Y	22.6	16	2.7	94
					Z	6.1	26	3.2	50
					RES	22.6	16		
4	Left Sill at Rear Door	1524	-673	-369	Y	75.7	15	73.2	22
5	Left Sill at Front Door	2810	-673	-365	Y	80.7	15	60.8	21
7	Rear Occupant Compartment	1968	380	-520	Y	23.5	17	5.9	61
12	B-Post Lower	2152	-680	-575	Y	149.0	14	59.7	22
13	B-Post Middle*	2144	-740	-1215	Y	109.0	11	14.8	17
14	A-Post Lower	3215	-724	-570	Y	145.9	9	95.8	15
15	A-Post Middle	3140	-760	-1105	Y	30.5	21	6.1	31
16	Front Seat Track	2407	-545	-686	Y	57.7	15	22.2	33
17	Rear Seat Track or Structure	1820	-543	-645	Y	38.5	15	12.8	59
18	Vehicle CG	2328	0	-535	X	8.6	22	16.0	14
					Y	27.5	16	10.4	25
					Z	35.3	28	23.5	15
					RES	38.8	15		

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

* = Questionable data after 25 msec.

DATA SHEET NO. 14

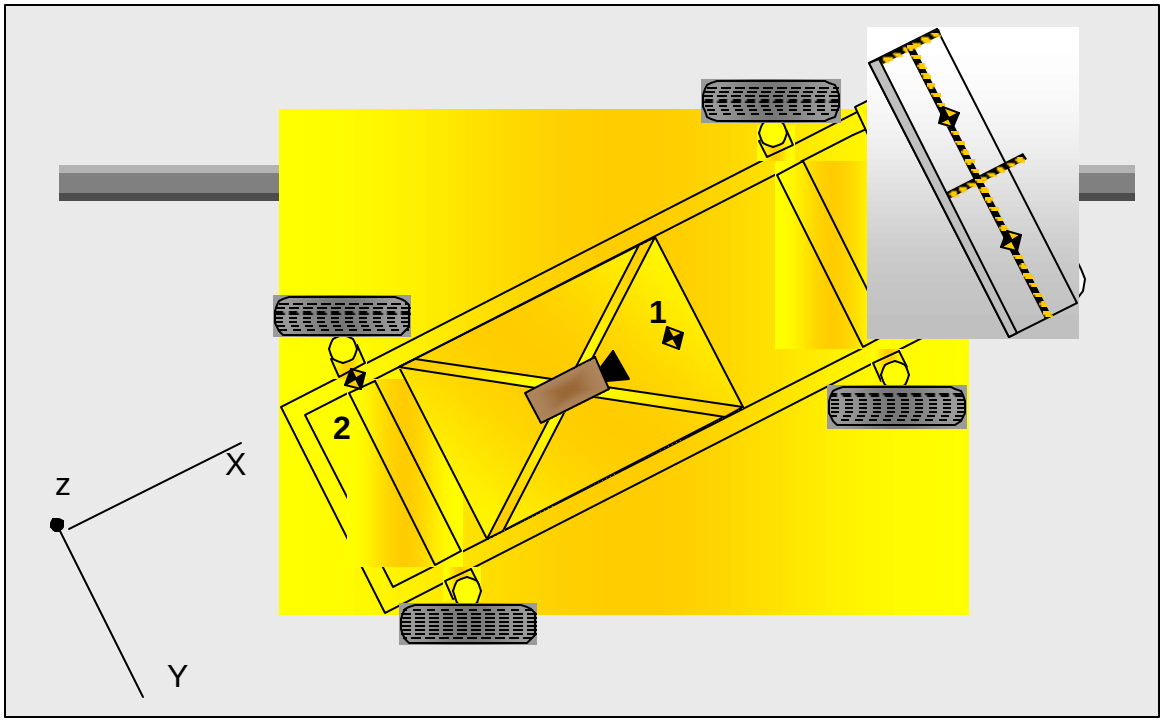
MDB ACCELEROMETER LOCATIONS AND DATA SUMMARY

Test Vehicle: 2002/Ford/Explorer/SUV NHTSA No. C20206
Test Program: FMVSS 214 Indicant Side Impact Test Date: 2/7/02

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	1.5	112	21.0	55
					Y	0.6	65	5.6	40
					Z	14.4	61	12.9	56
					RES	24.7	56		
2	MDB Rear	-2591	-625	-622	X	1.8	120	27.0	41
					Y	4.8	23	2.3	65

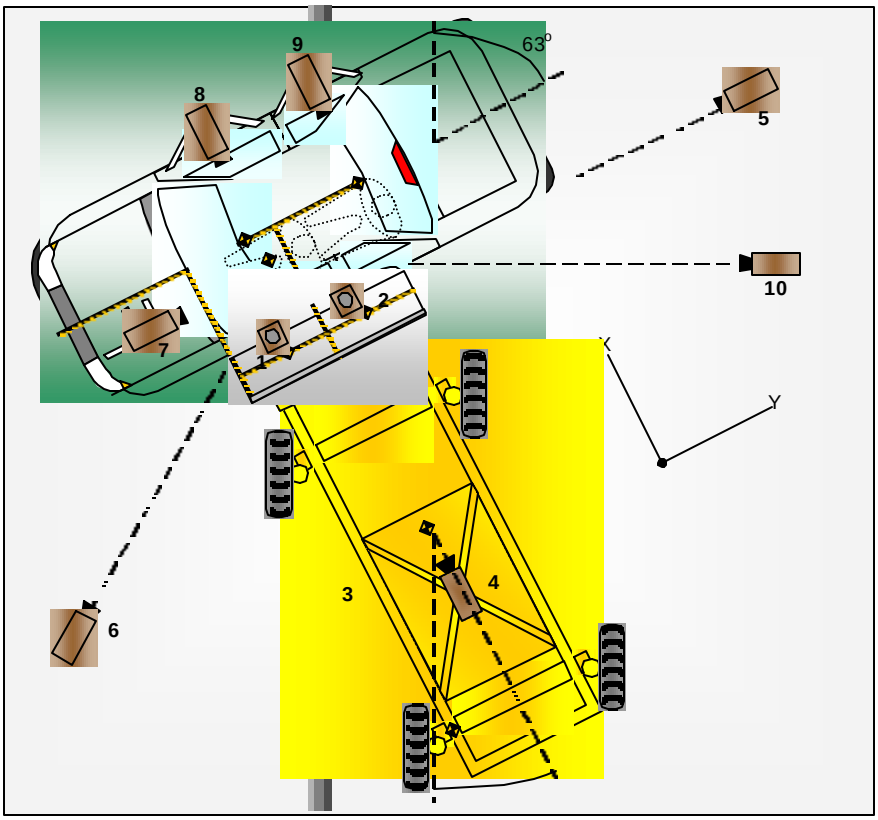
Reference Points X - MDB Front Axle (+ forward)
Y - MDB Centerline (+ to right)
Z - Ground Plane (+ down)



DATA SHEET NO. 15

HIGH SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2002/Ford/Explorer/SUV NHTSA No. C20206
Test Program: FMVSS 214 Indicant Side Impact Test Date: 2/7/02



No.	Camera View	Location (mm)			Lens (mm)	Film Speed (fps)
		X	Y	Z		
1	Overhead Overall	1042	50	-4990	8	1099
2	Overhead Close-up	-789	658	-4950	-	990
3	MDB Onboard, Impact Point Close-up				35	1010
4	MDB Onboard, Centerline of Impact				13	1026
5	Right Side, Ground Level, Overall	3920	8934	-1743	25	926
6	Left Side, Ground Level, Overall	-1801	-1752	-1422	13	1015
7	Vehicle Onboard Front SID, Front				13	513
8	Vehicle Onboard Front SID, Side				13	510
9	Vehicle Onboard Rear SID, Side				13	513
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/Ford/Explorer/SUV NHTSA No. C20206
Test Program: FMVSS 214 Indicant Side Impact Test Date: 2/7/02

Test Time: 12:22 pm Temperature at Time of Impact: 20.0°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)

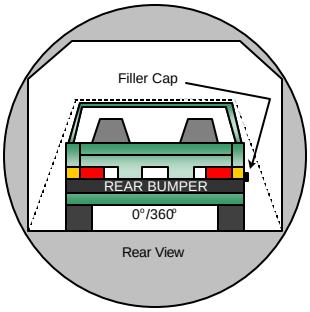
C. For the following 25 minutes: 0 oz.
(Maximum allowable = 1 oz./minute)

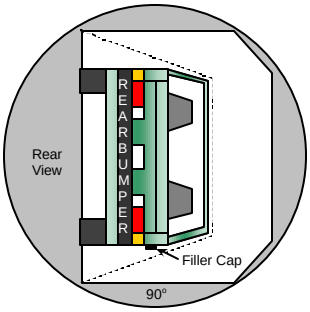
D. Spillage Details: none

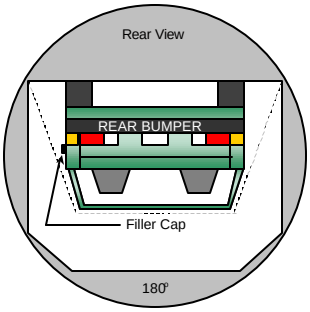
DATA SHEET NO. 17

FMVSS 301 STATIC ROLLOVER DATA SHEET

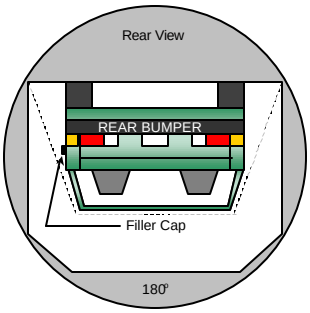
Test Vehicle: 2002/Ford/Explorer/SUV NHTSA No. C20206
Test Program: FMVSS 214 Indicant Side Impact Test Date: 2/7/02

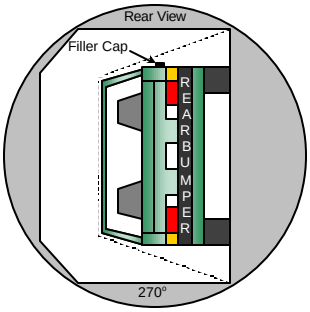


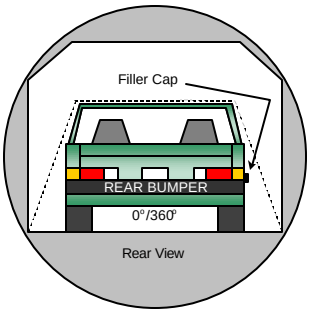




0^O to 90^O 90^O to 180^O







180^O to 270^O 270^O to 360^O

1. The specified fixture rollover rate for each 90^o 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°	162	300	0
90° to 180°	152	300	0
180° to 270°	135	300	0
270° to 360°	171	300	0

APPENDIX A

PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

Pre-Test Front View of Test Vehicle

Post-Test Front View of Test Vehicle

Pre-Test Rear View of Test Vehicle

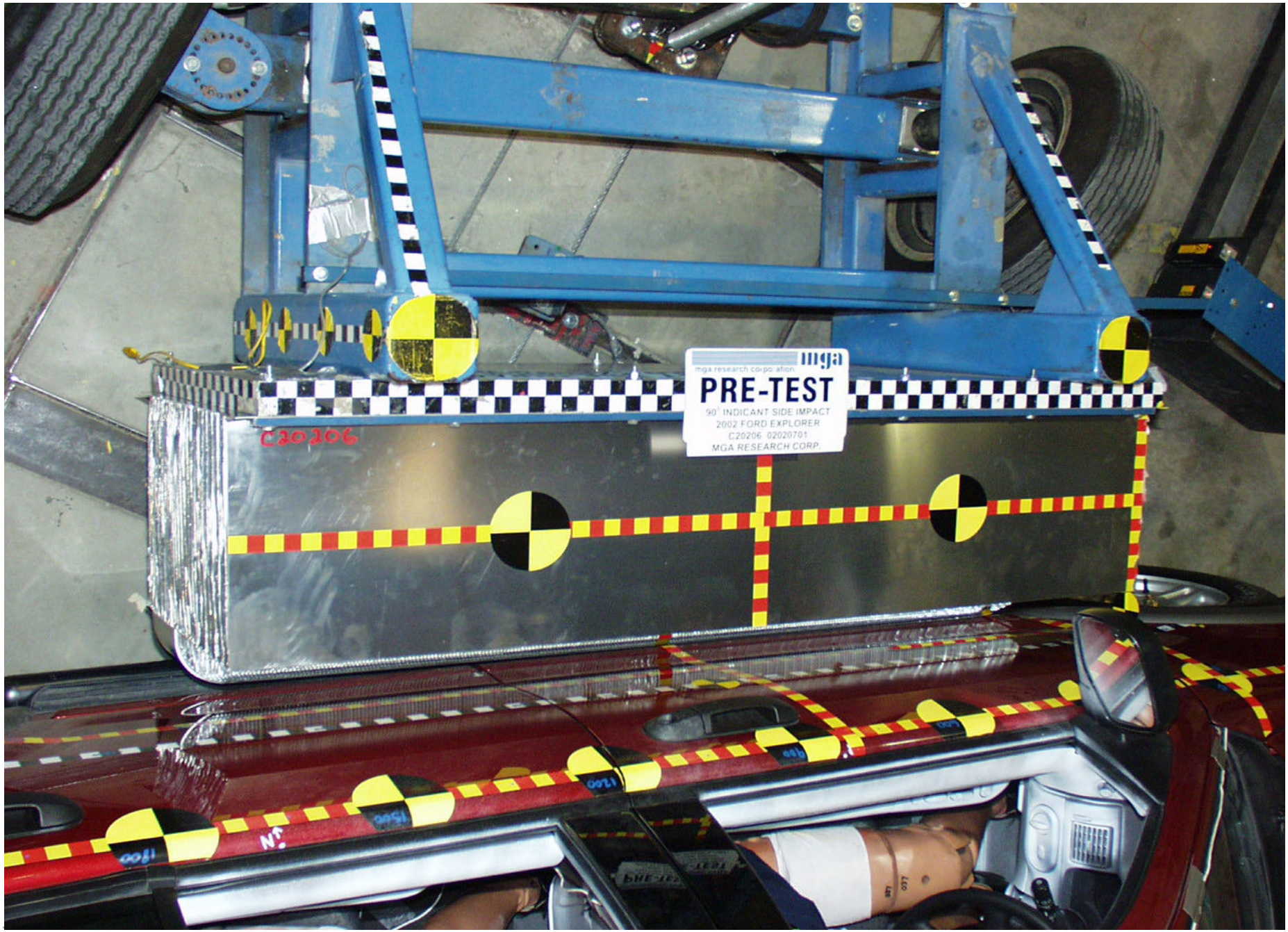
Post-Test Rear View of Test Vehicle

Pre-Test Left Side View of Test Vehicle

Post-Test Left Side View of Test Vehicle

Pre-Test MDB Positioned Against Vehicle (left side)

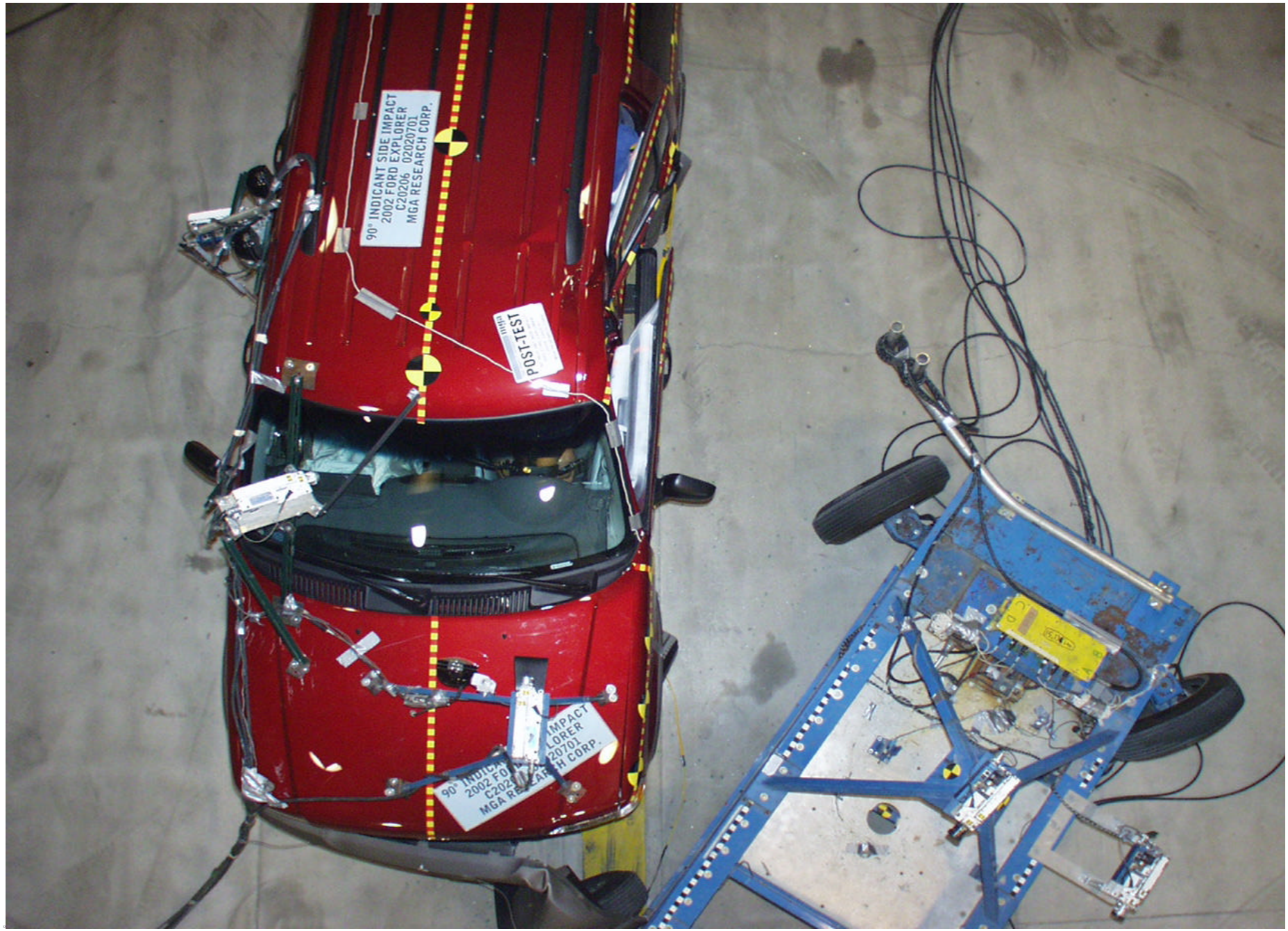
Pre-Test MDB Positioned Against Vehicle (right side)



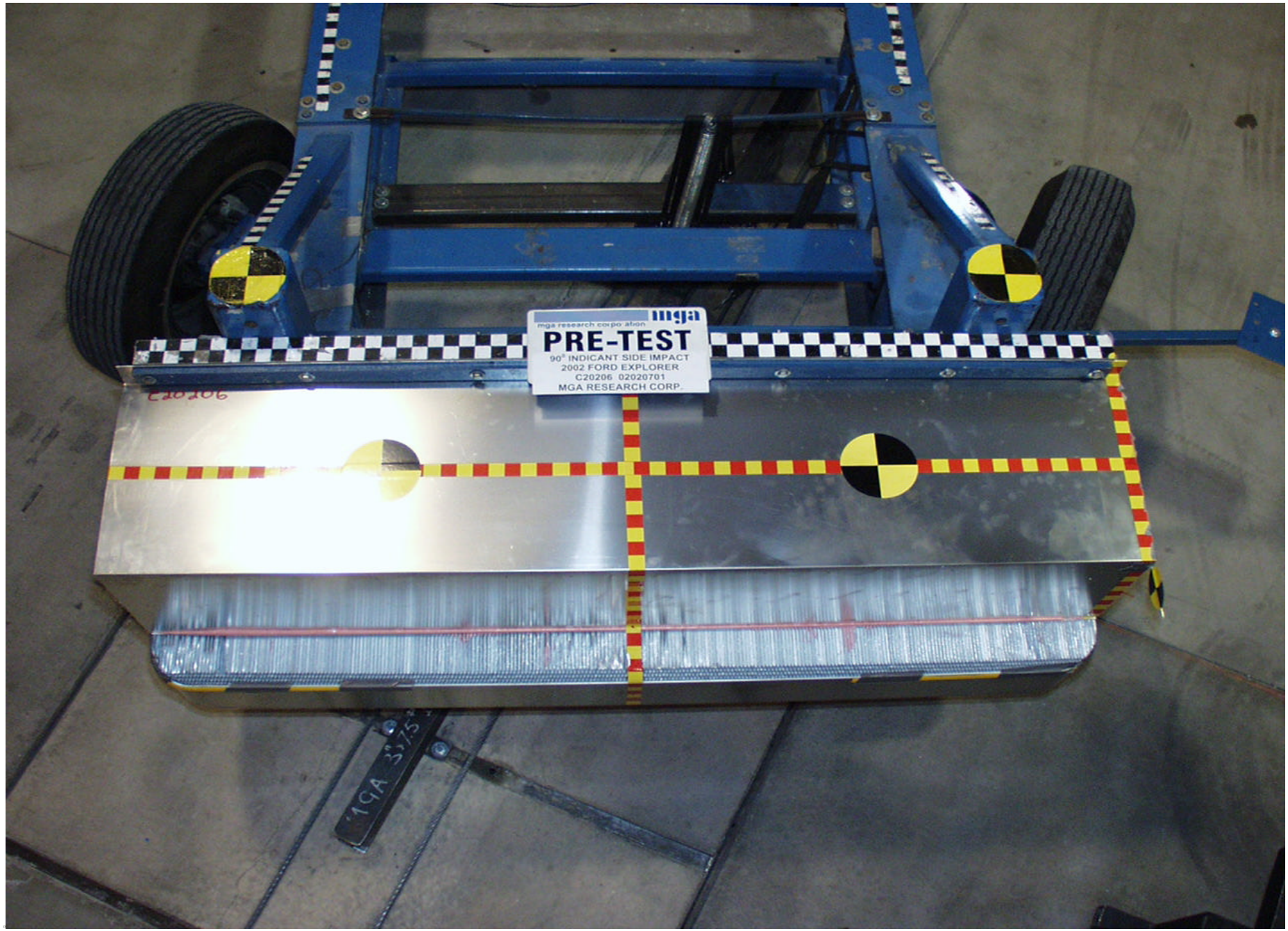
Pre-Test MDB Positioned Against Vehicle Overhead View

Post-Test MDB and Vehicle (left side)

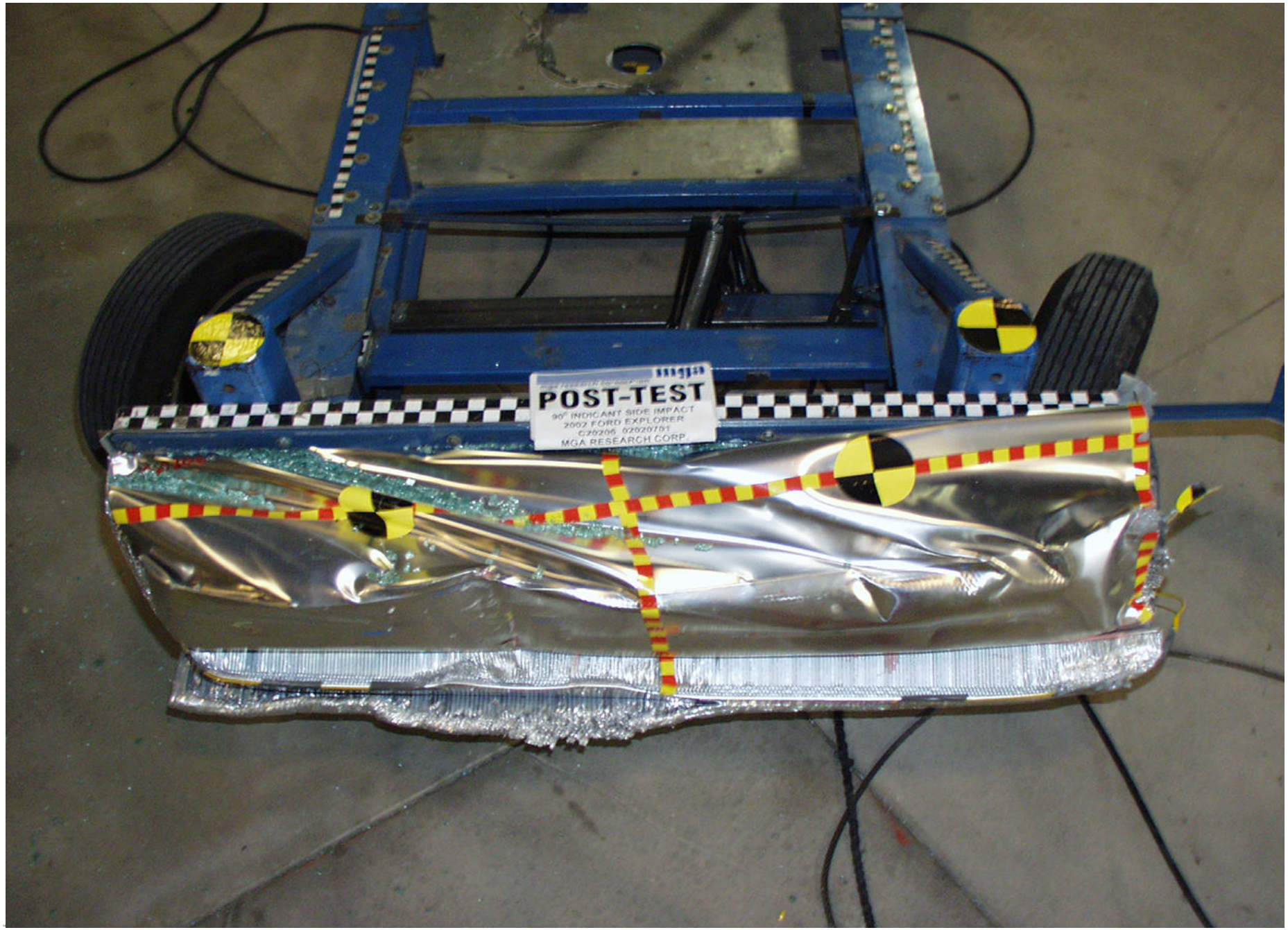
Post-Test MDB and Vehicle (right side)



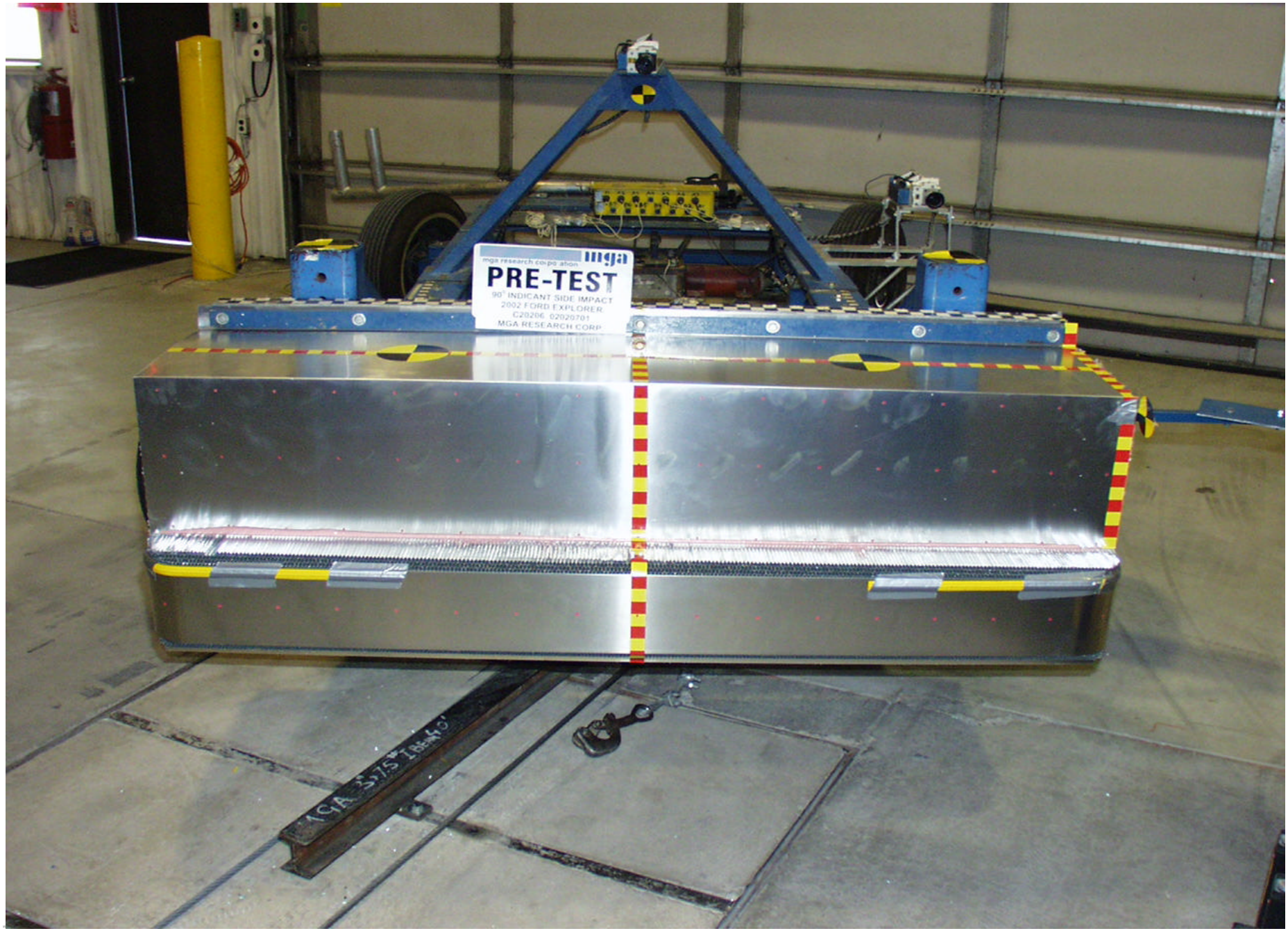
Post-Test MDB and Vehicle Overhead View



Pre-Test MDB Top View



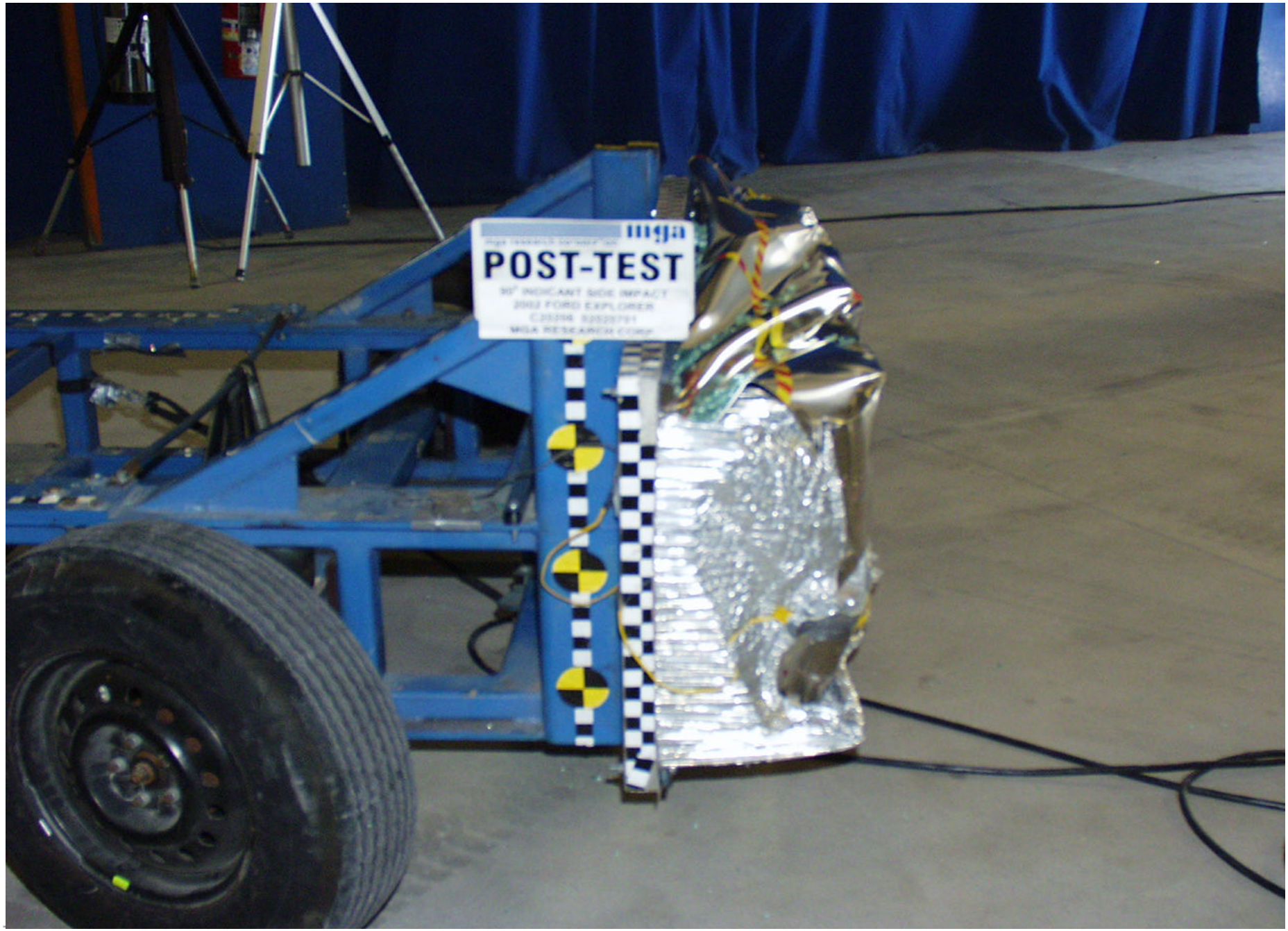
Post-Test MDB Top View



Pre-Test MDB Front View

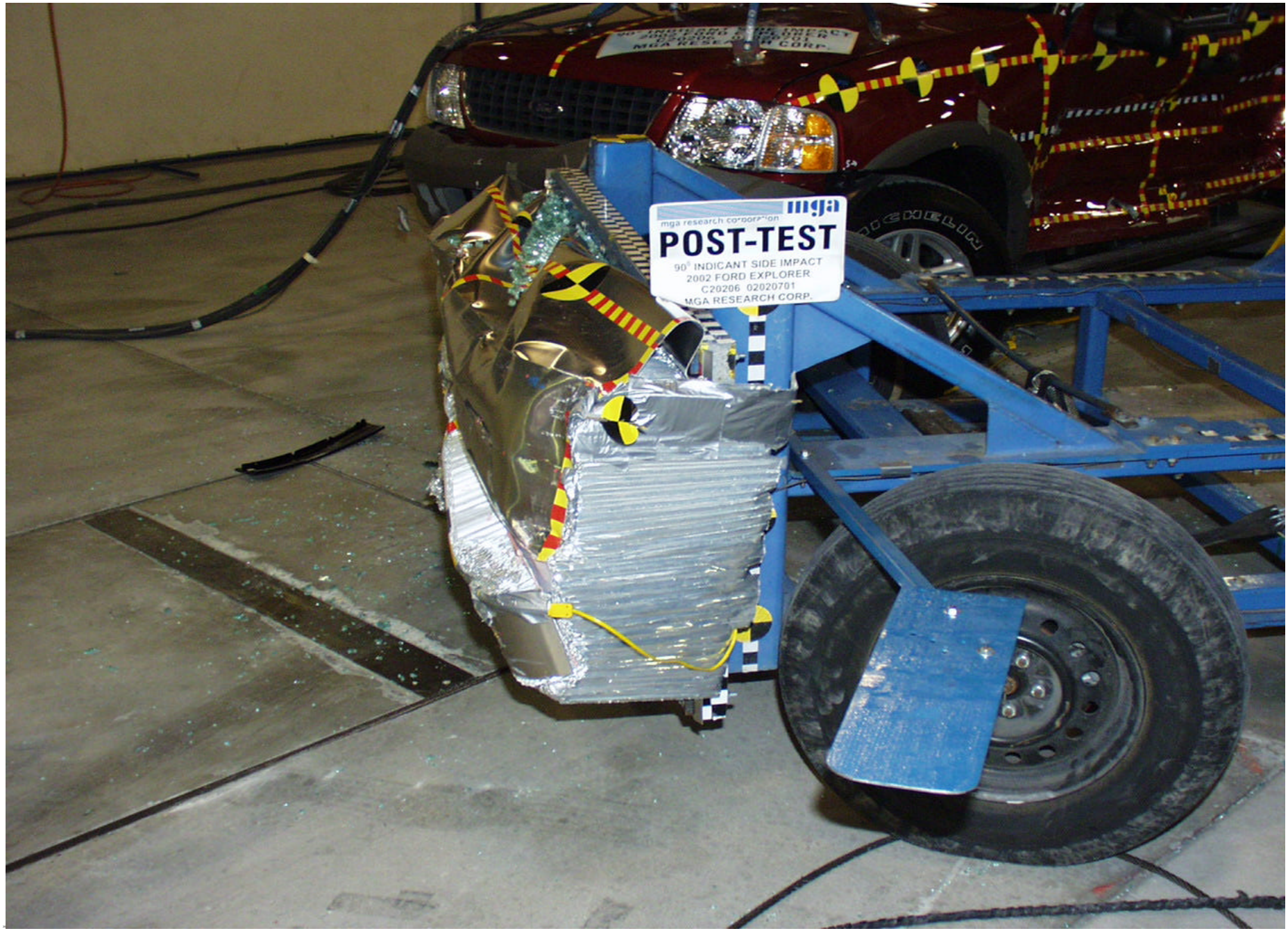
Post-Test MDB Front View

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

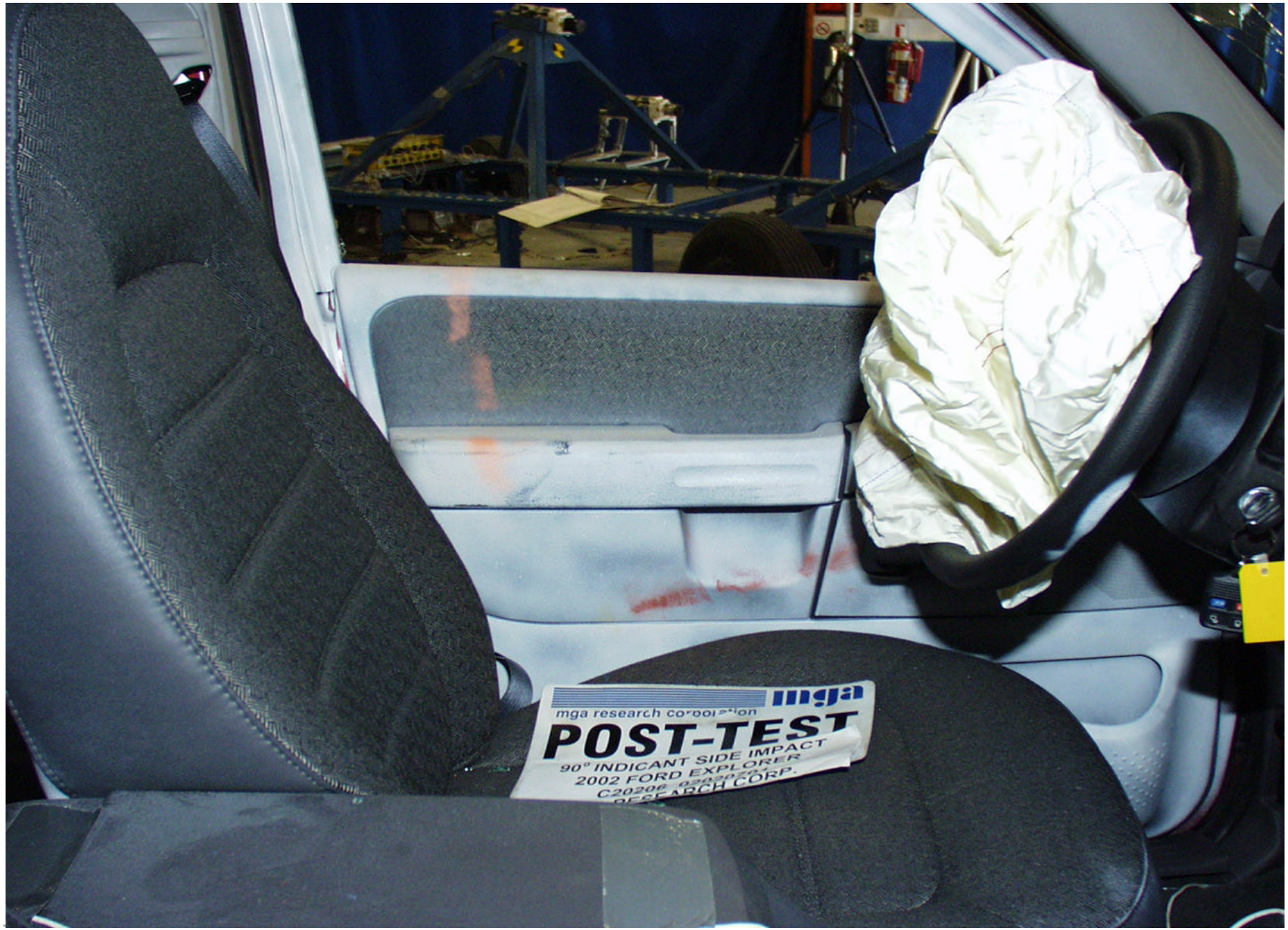
Pre-Test Driver Dummy Left Side View

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

Pre-Test Passenger Dummy Right Side View

Post-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)

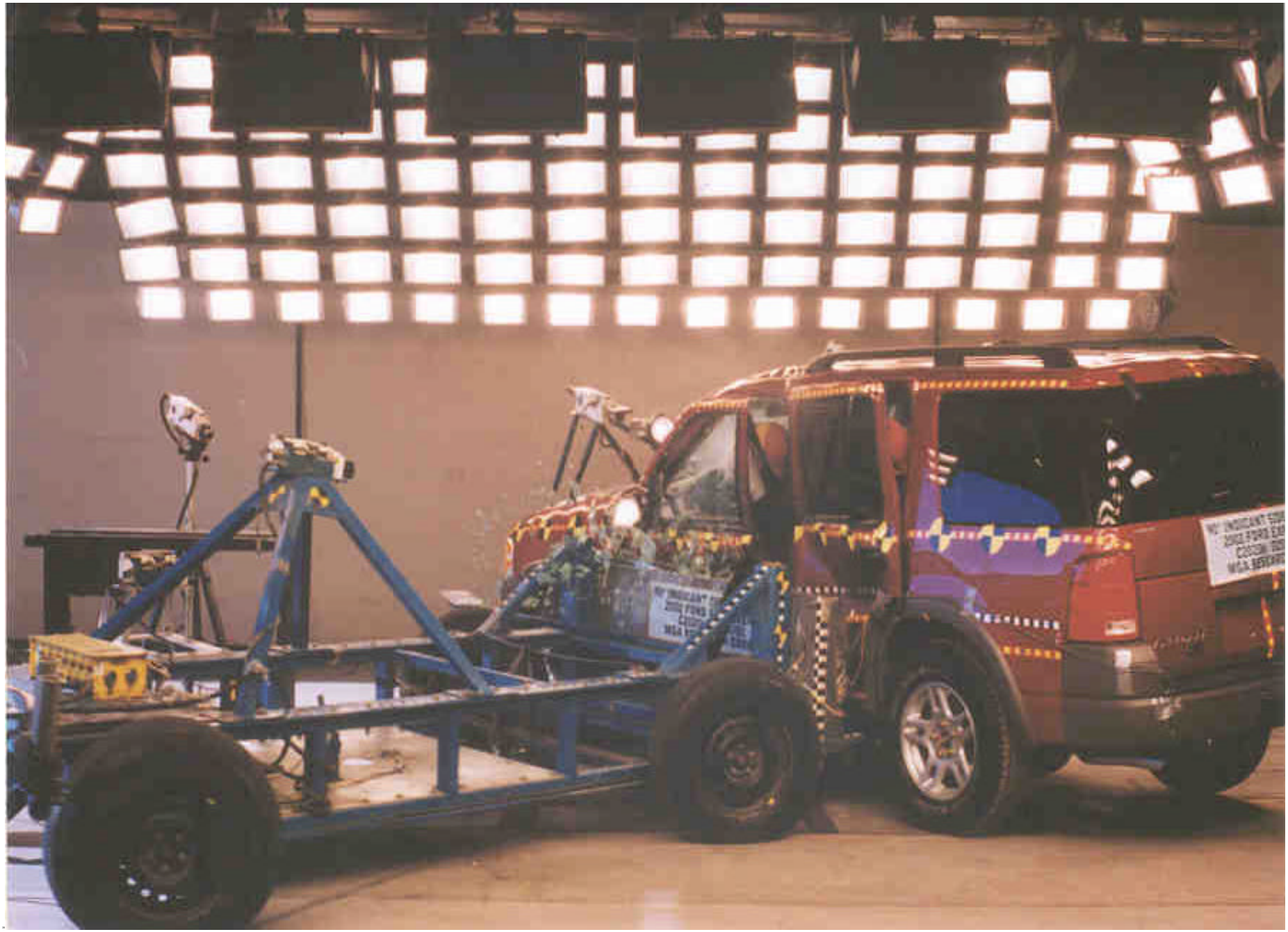
Pre-Test Passenger Dummy Shoulder and Door Top View

Post-Test Passenger Dummy Contact

Post-Test Passenger Dummy Head Contact

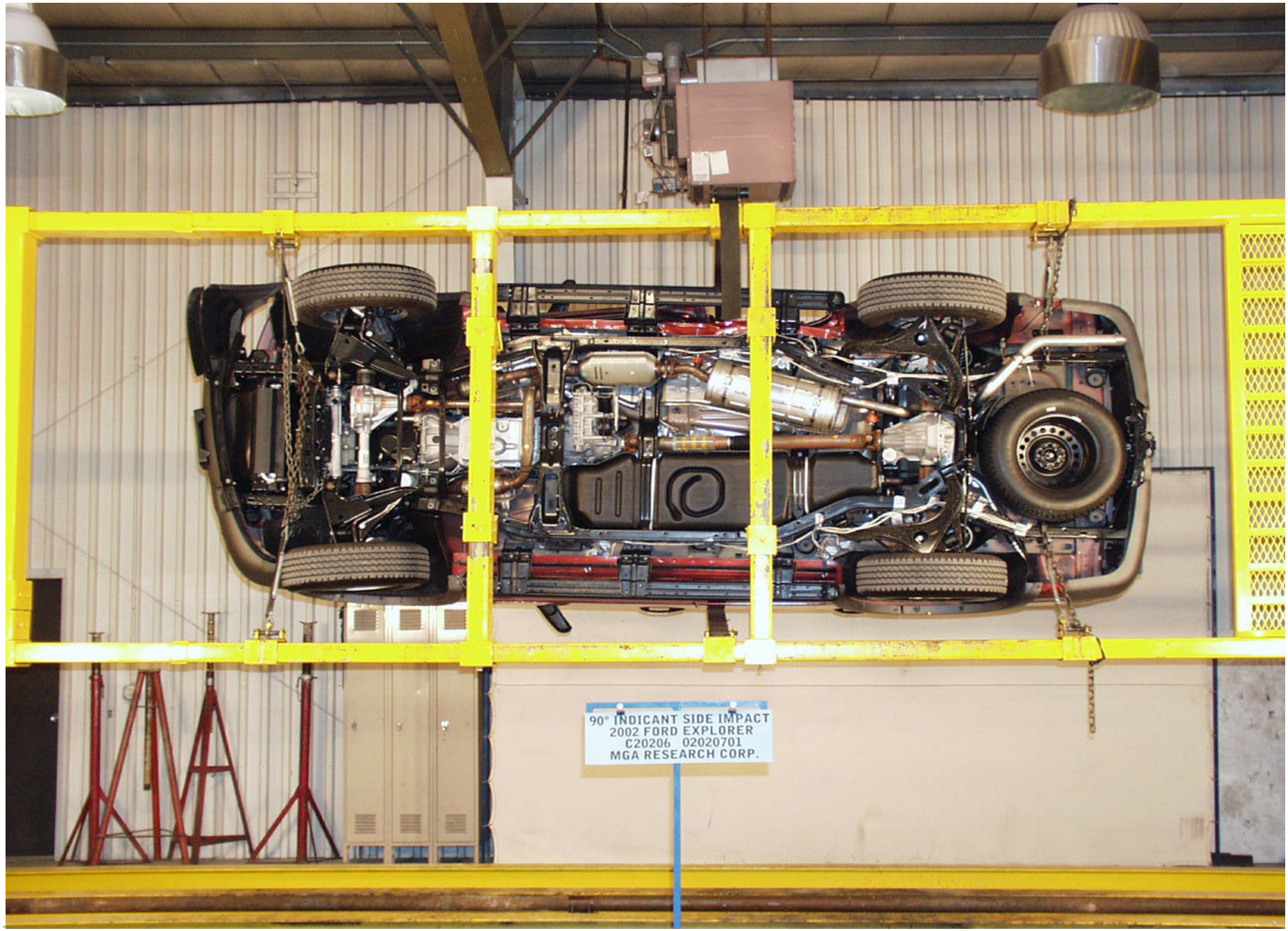
Pre-Test Left Front Impact Point on Vehicle

Post-Test Left Front Impact Point on Vehicle

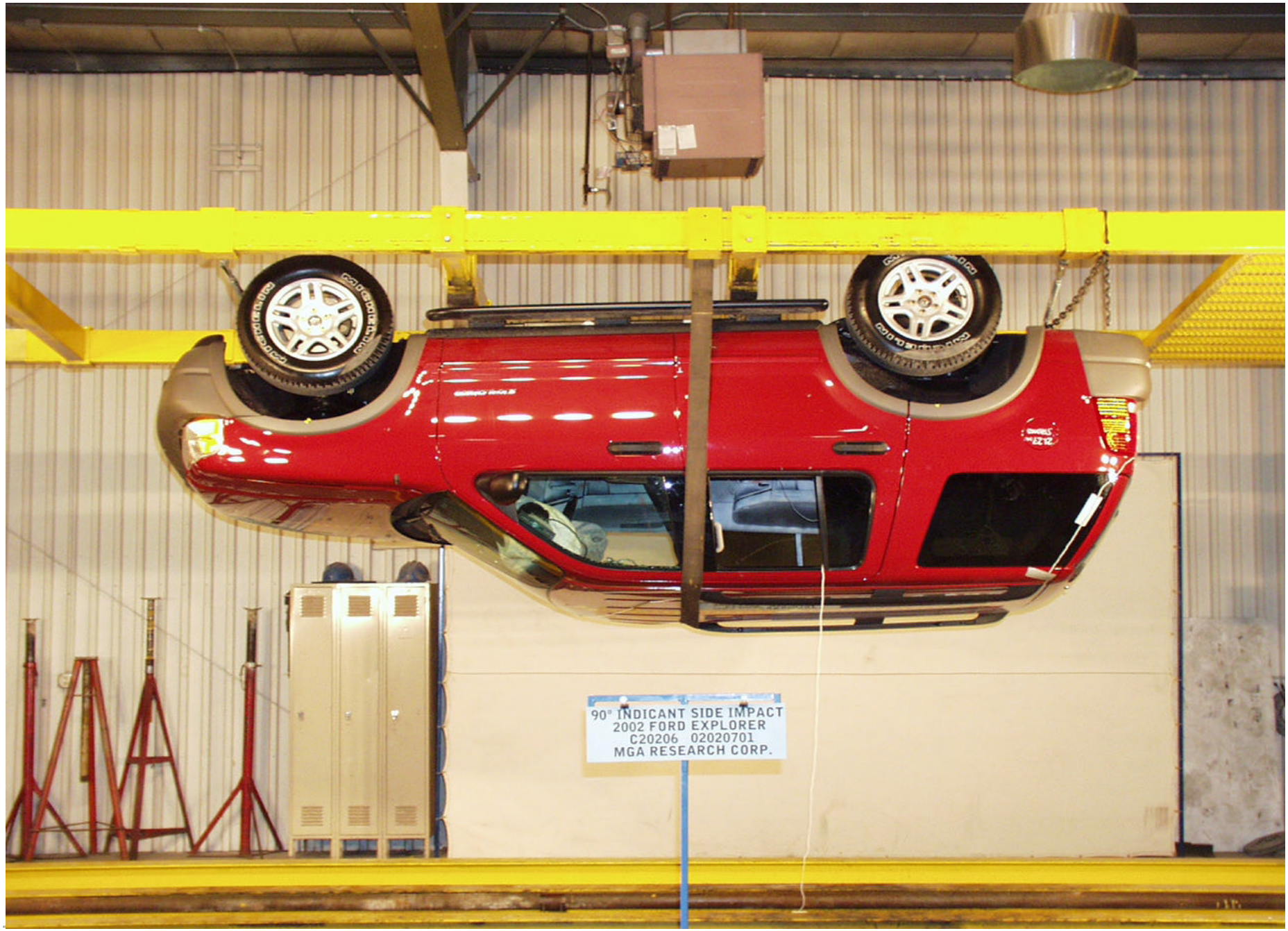


Impact

Vehicle Certification Label


90° INDICANT SIDE IMPACT
2002 FORD EXPLORER
C20206 02020701
MGA RESEARCH CORP.

Rollover 90



Rollover 180

Rollover 270

Rollover 360

Left Front Attitude Point

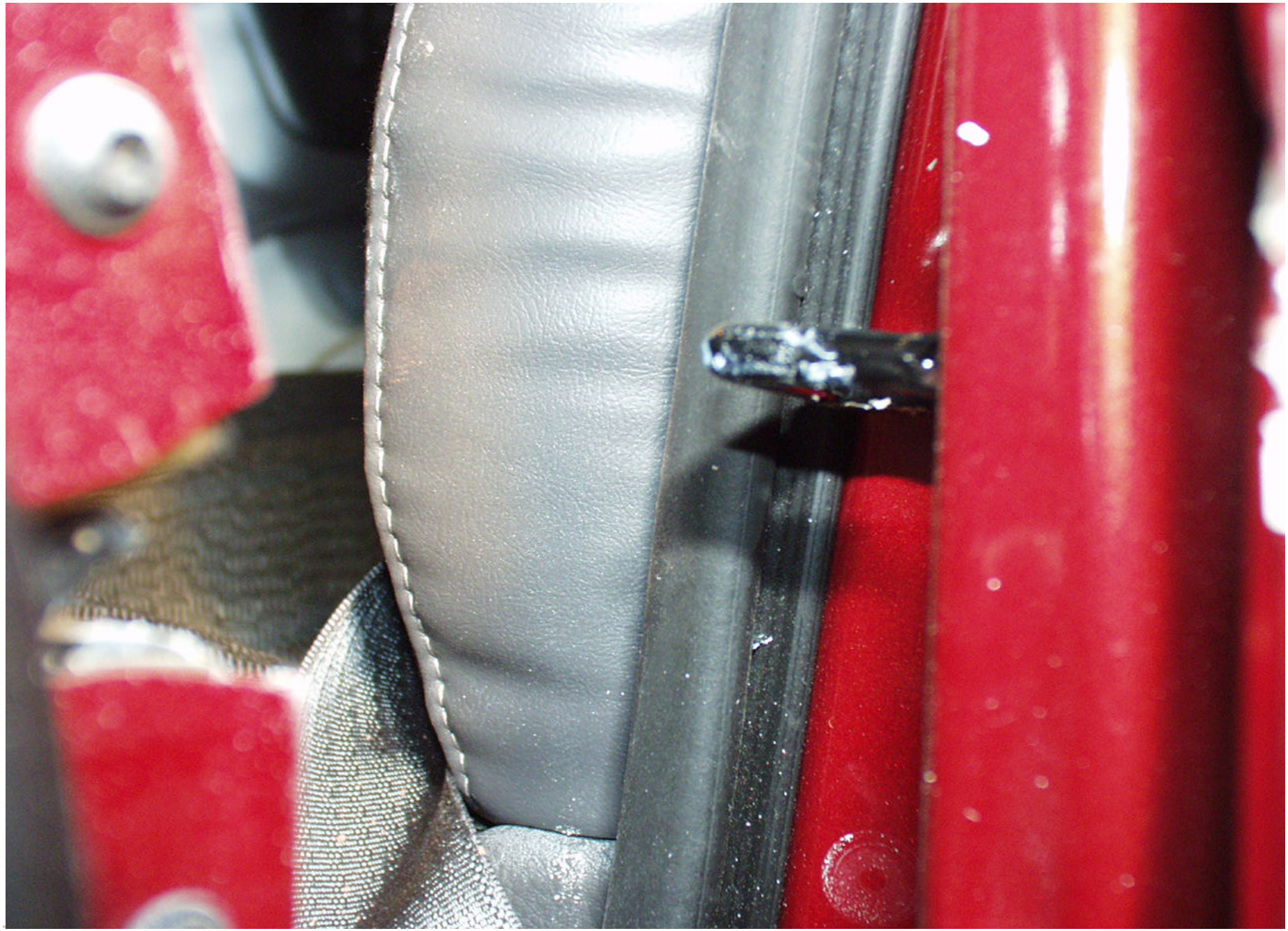
Right Front Attitude Point

Left Rear Attitude Point

Right Rear Attitude Point

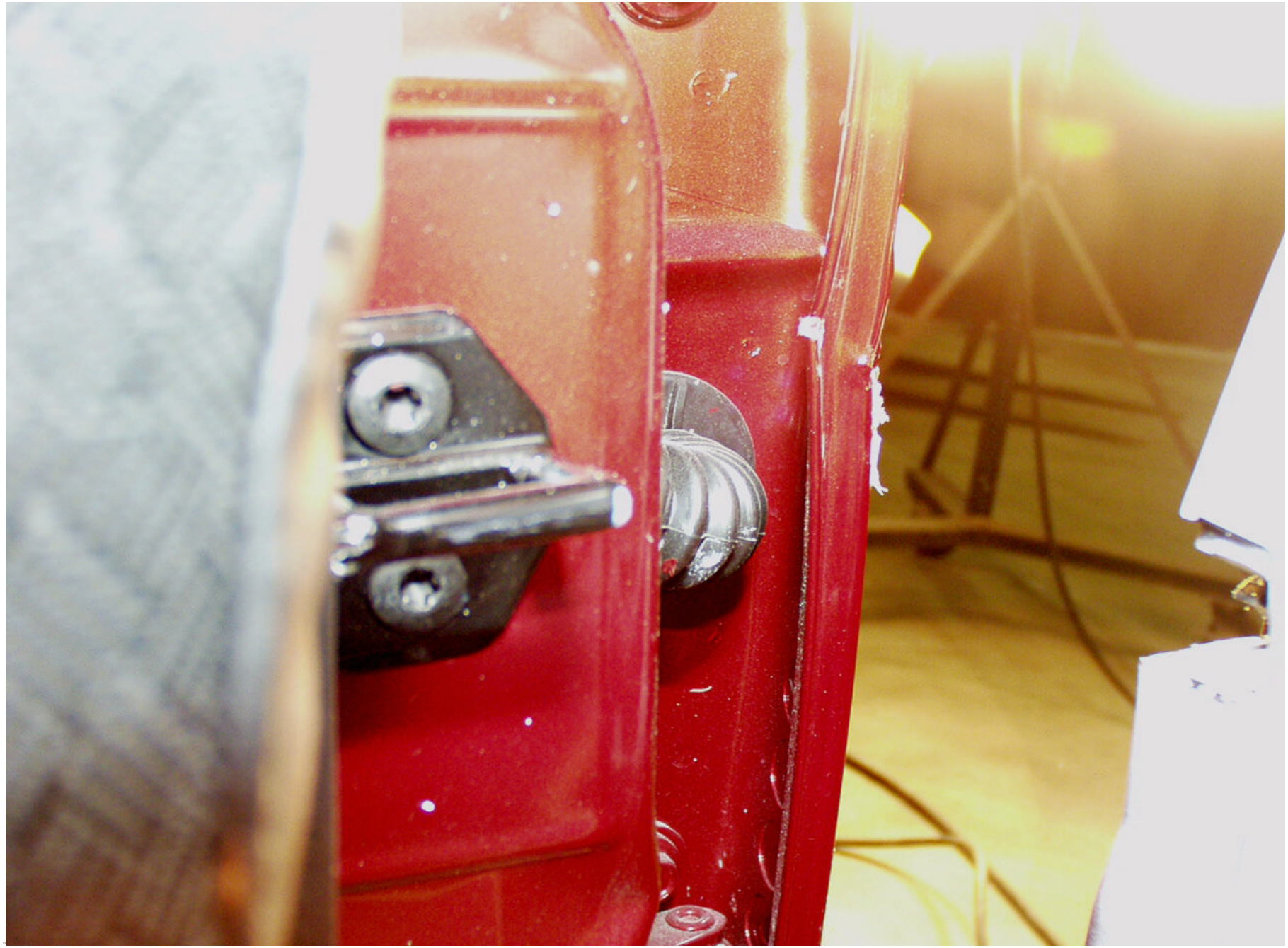
Post-Test Latch View

Post-Test Door Striker



Post-Test Latch and Door Striker View

Post-Test Door Opening from Outside



Post-Test Door Opening from Inside

APPENDIX B

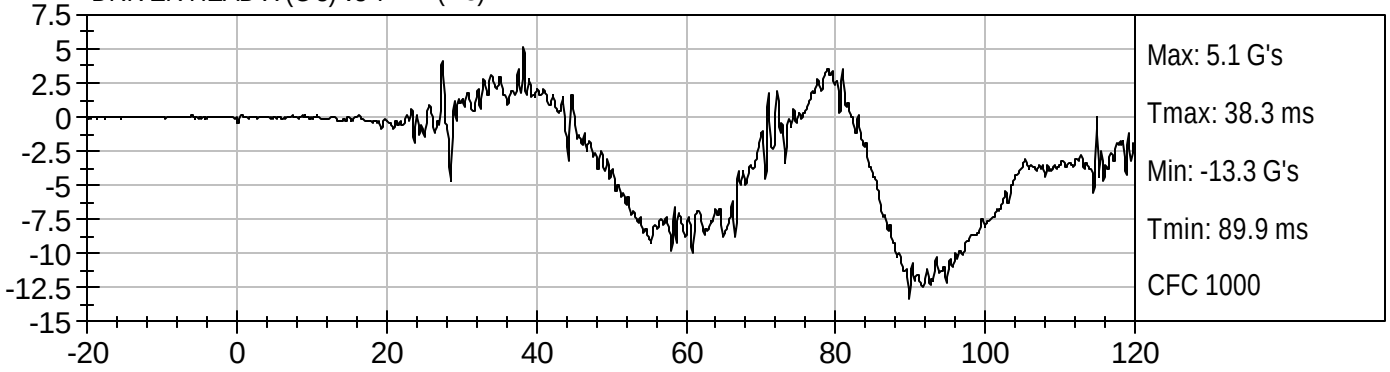
SID, VEHICLE, AND MDB RESPONSE DATA

TABLE OF DATA PLOTS

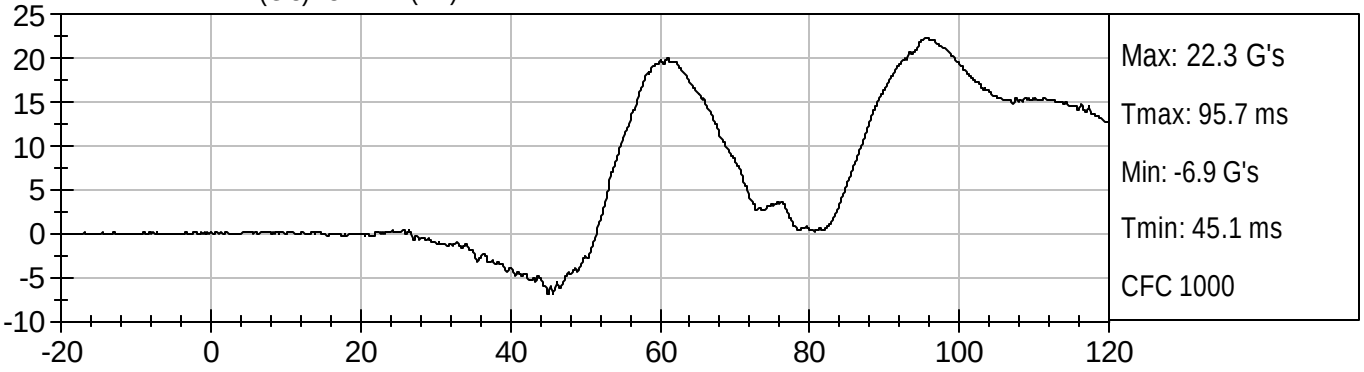
90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)

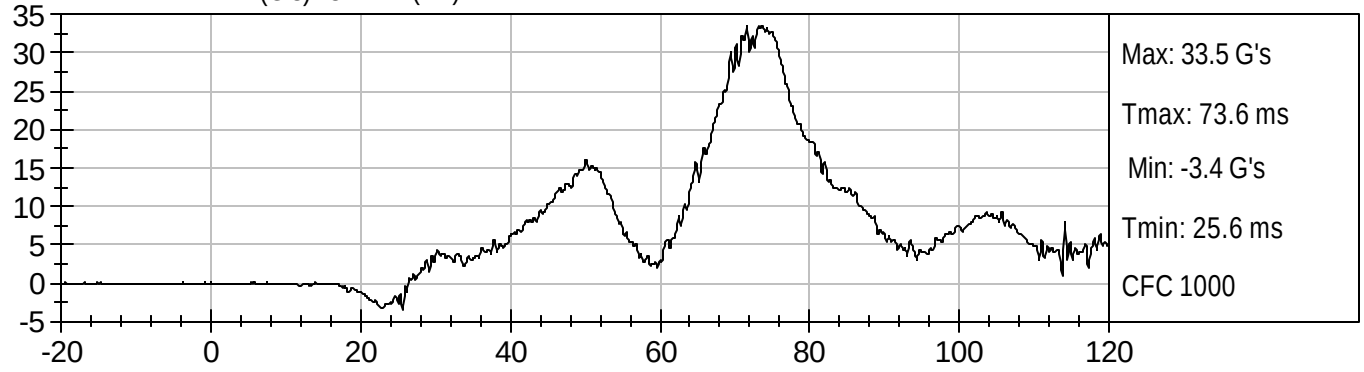
DRIVER HEAD X (G's) vs TIME (ms)



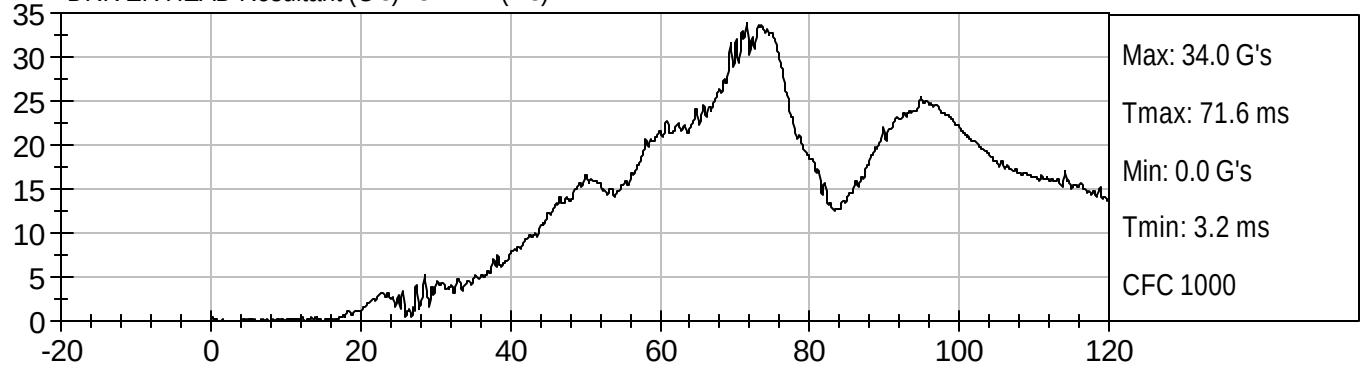
DRIVER HEAD Y (G's) vs TIME (ms)



DRIVER HEAD Z (G's) vs TIME (ms)

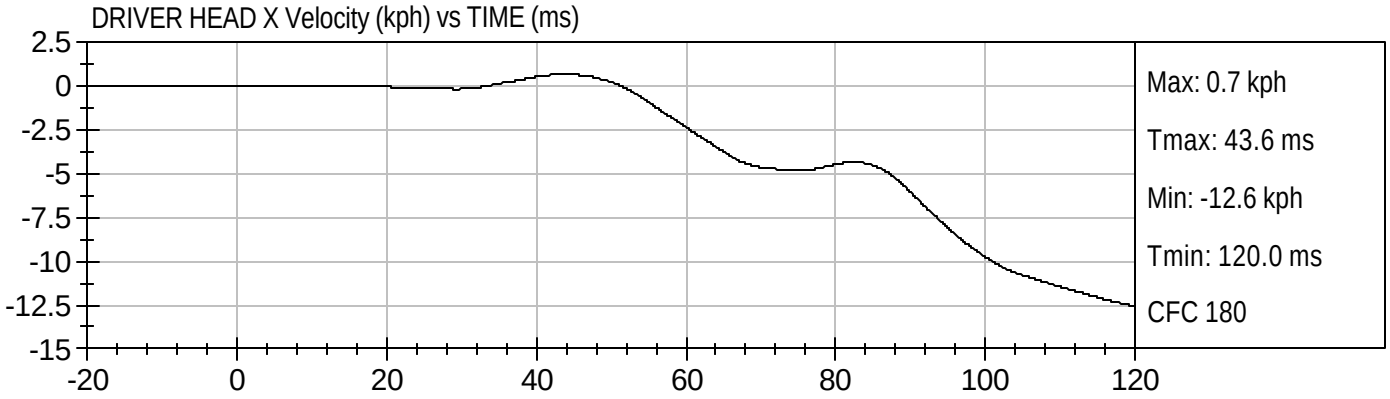


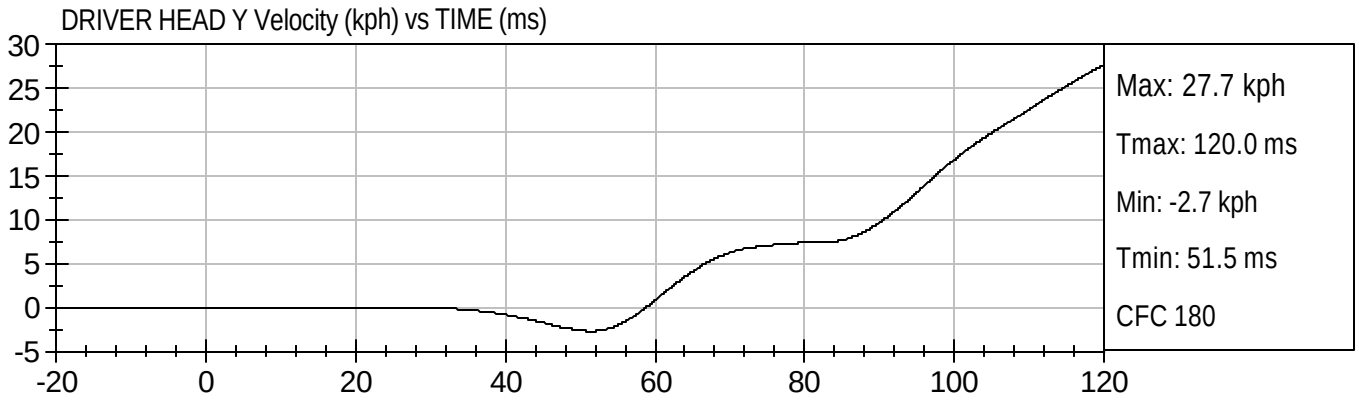
DRIVER HEAD Resultant (G's) vs TIME (ms)

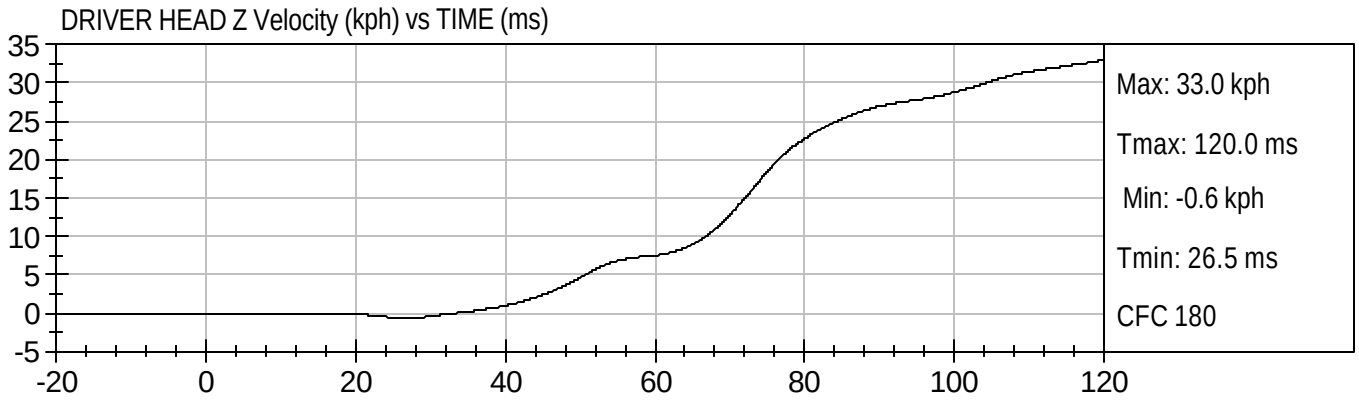


90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)



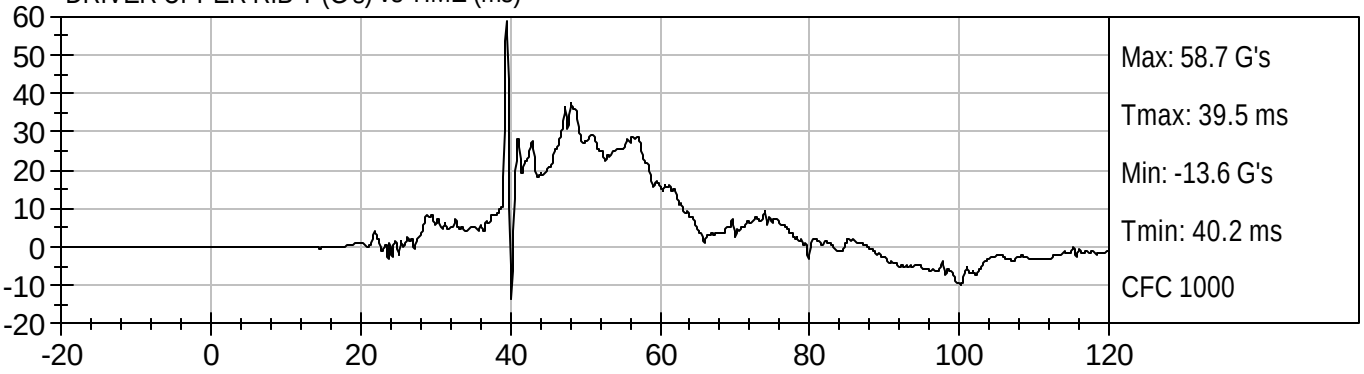




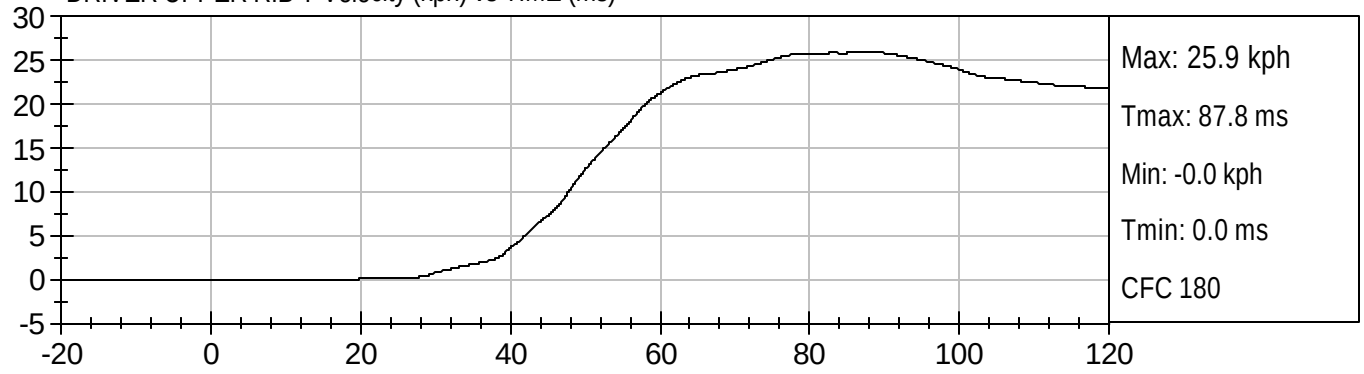
90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)

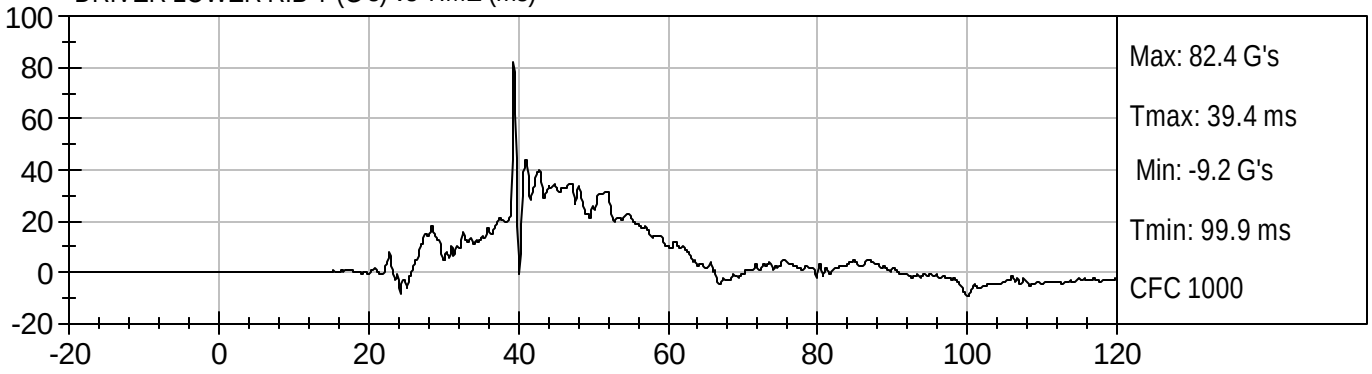
DRIVER UPPER RIB Y (G's) vs TIME (ms)



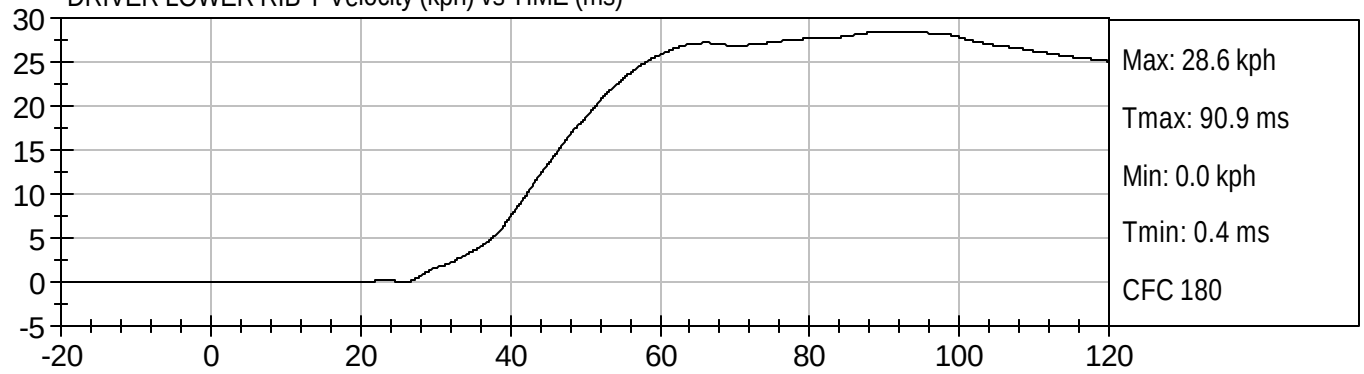
DRIVER UPPER RIB Y Velocity (kph) vs TIME (ms)



DRIVER LOWER RIB Y (G's) vs TIME (ms)



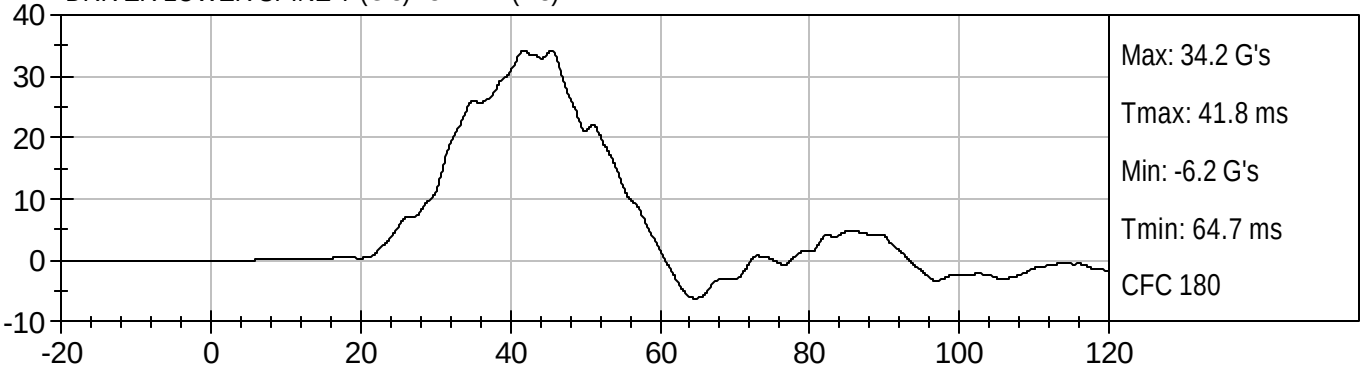
DRIVER LOWER RIB Y Velocity (kph) vs TIME (ms)



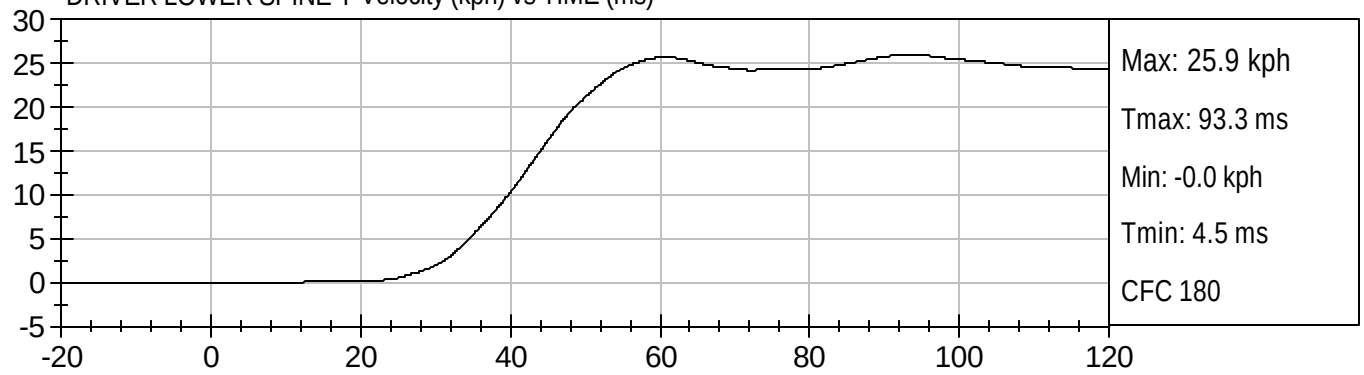
90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)

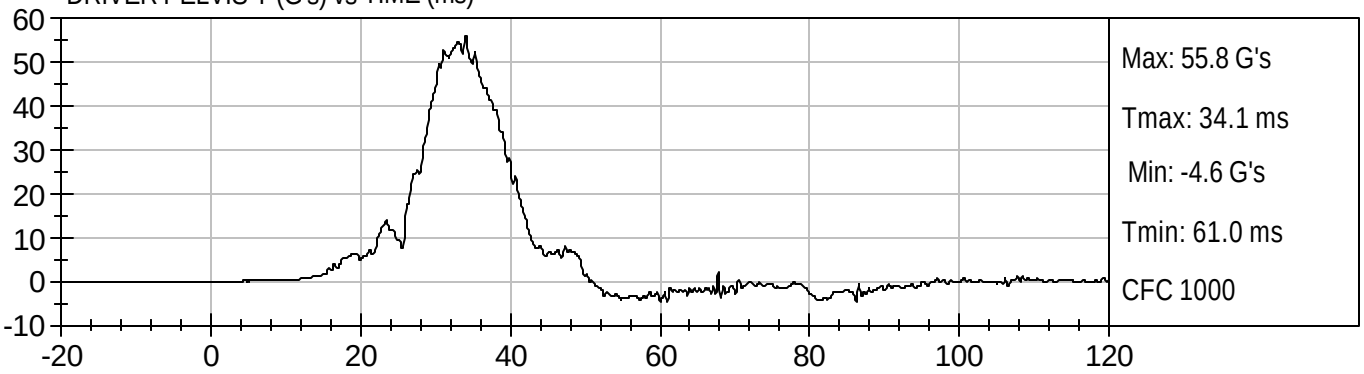
DRIVER LOWER SPINE Y (G's) vs TIME (ms)



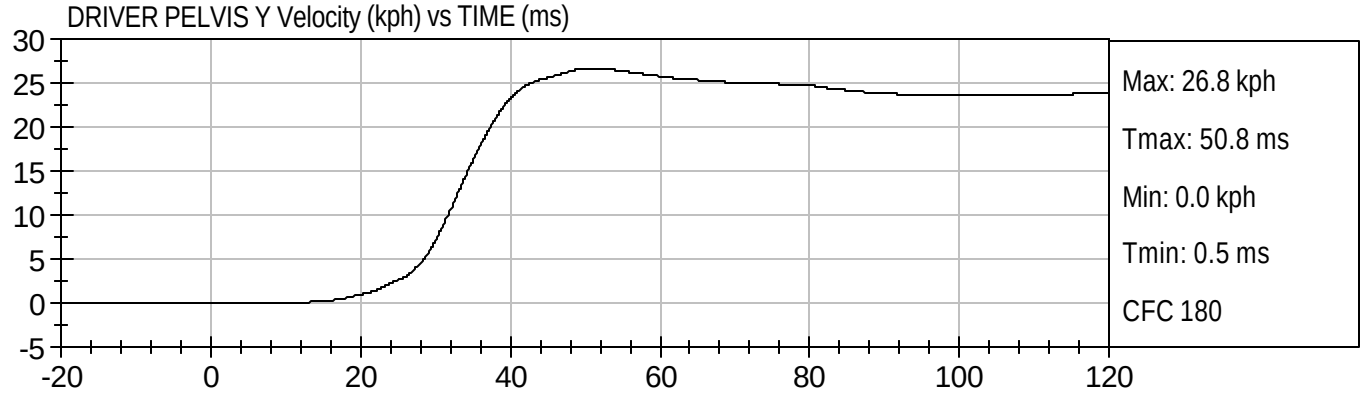
DRIVER LOWER SPINE Y Velocity (kph) vs TIME (ms)



DRIVER PELVIS Y (G's) vs TIME (ms)

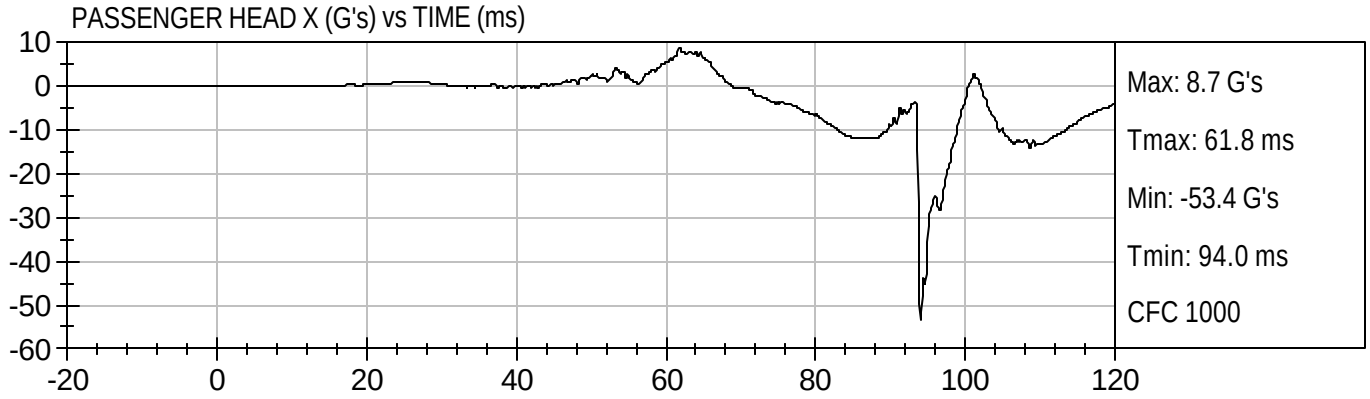


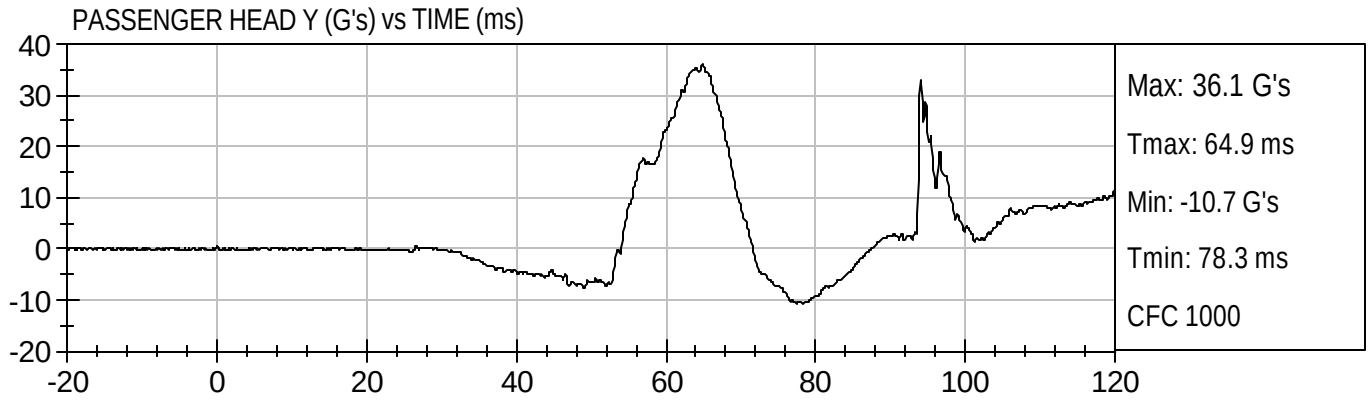
DRIVER PELVIS Y Velocity (kph) vs TIME (ms)

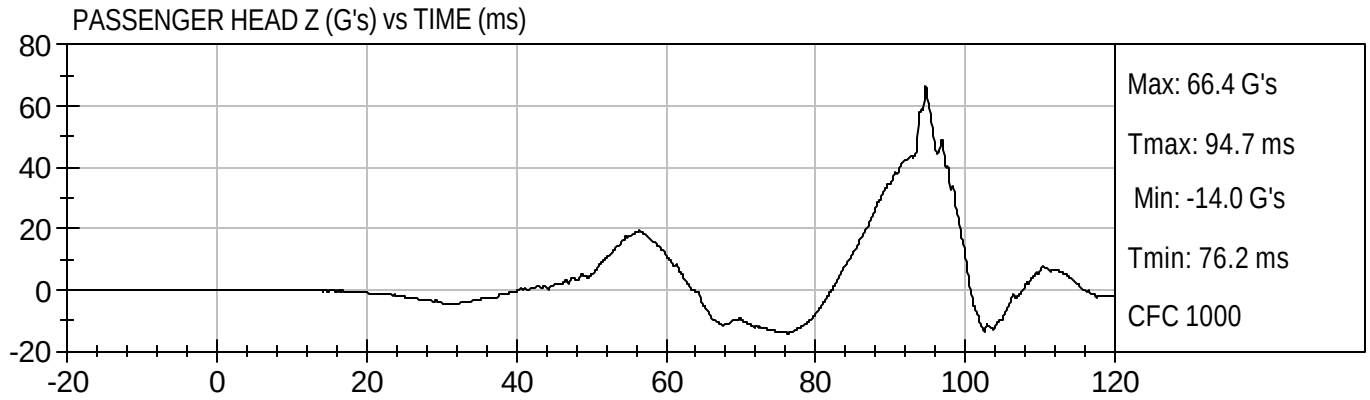


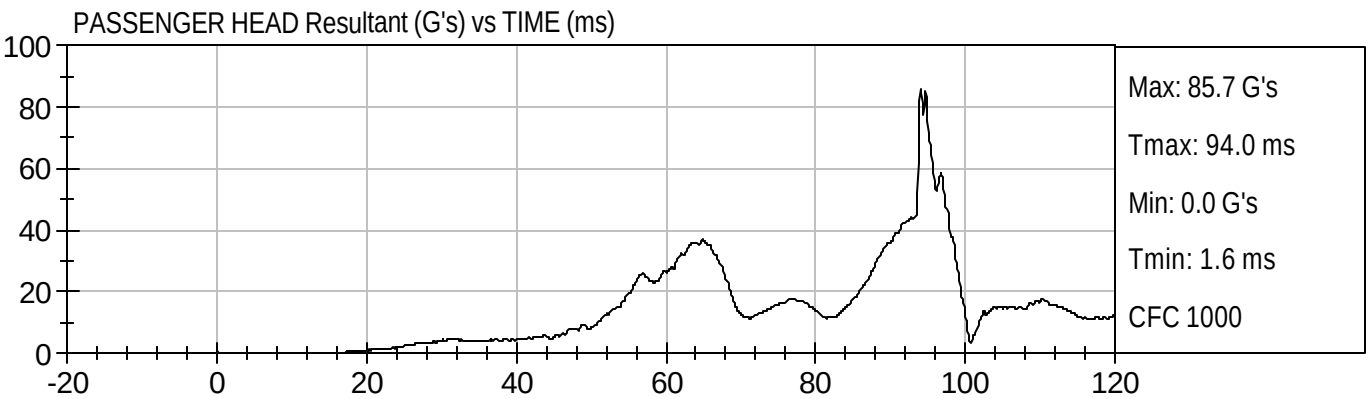
90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)





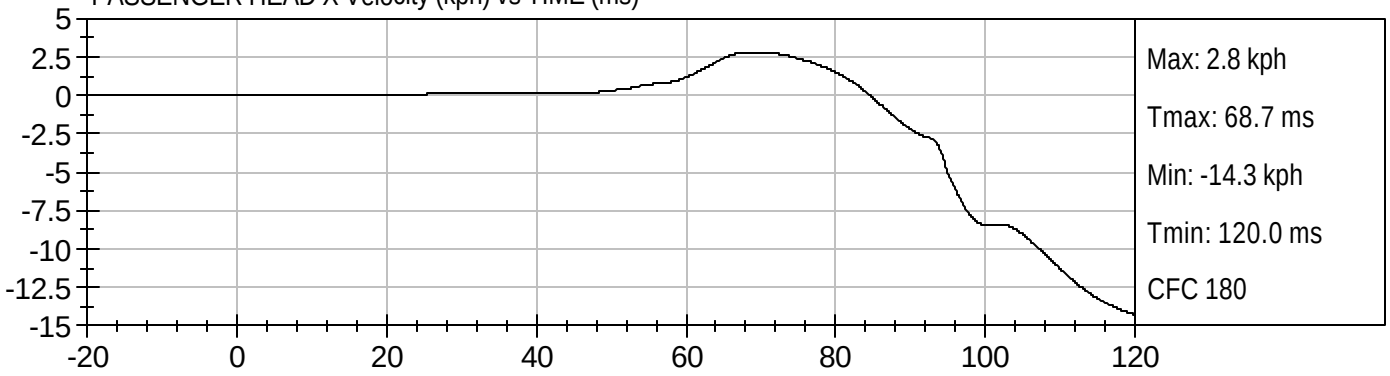




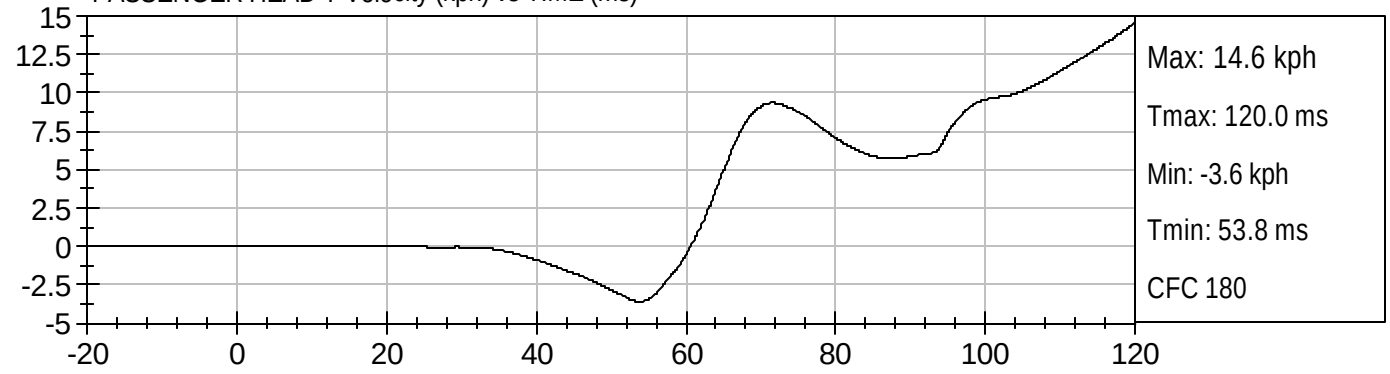
90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)

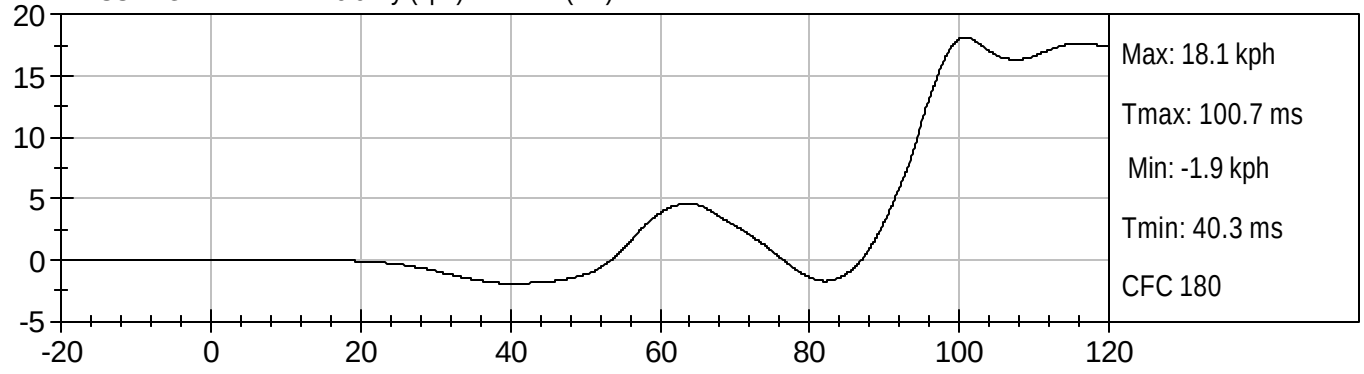
PASSENGER HEAD X Velocity (kph) vs TIME (ms)



PASSENGER HEAD Y Velocity (kph) vs TIME (ms)



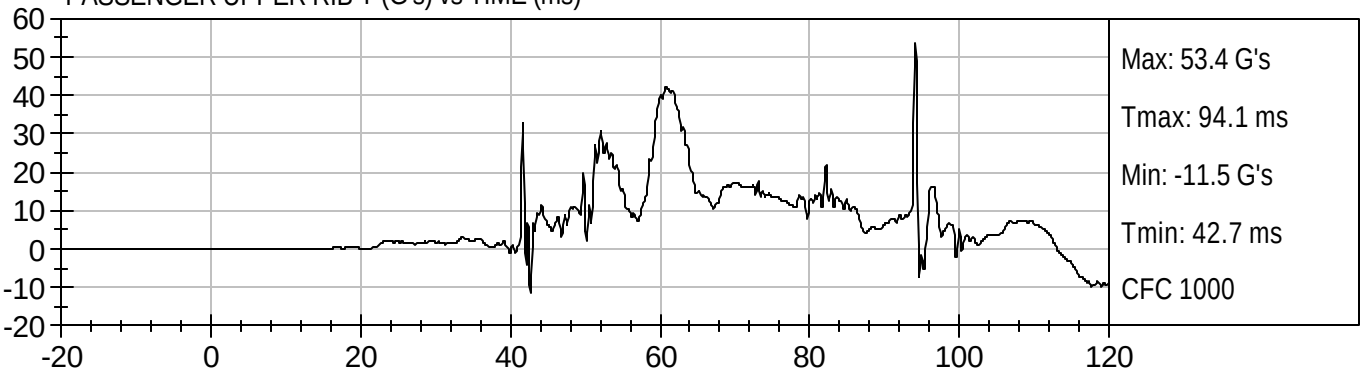
PASSENGER HEAD Z Velocity (kph) vs TIME (ms)



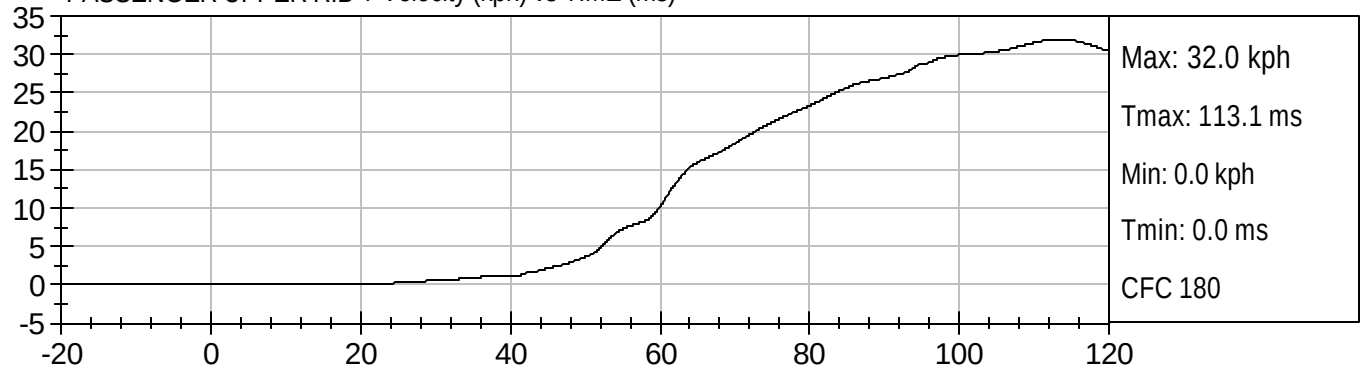
90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)

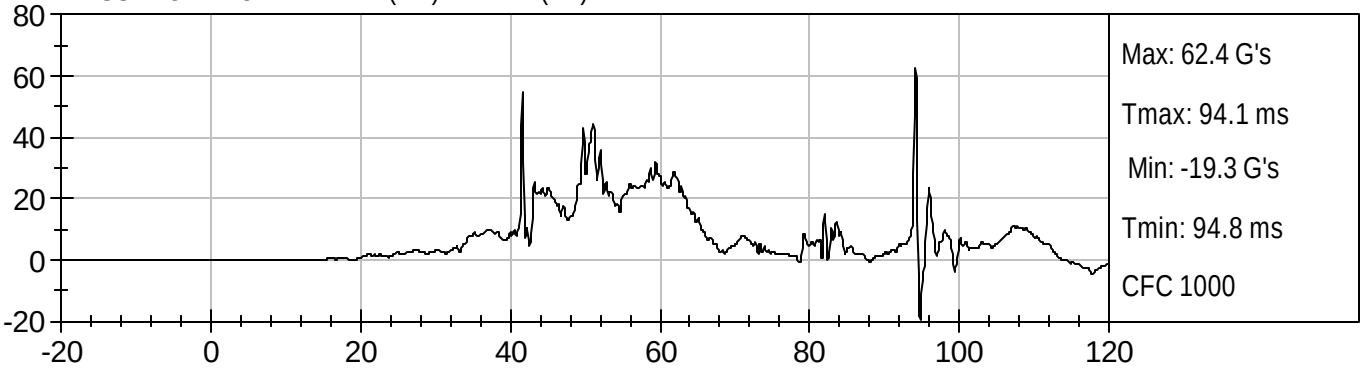
PASSENGER UPPER RIB Y (G's) vs TIME (ms)



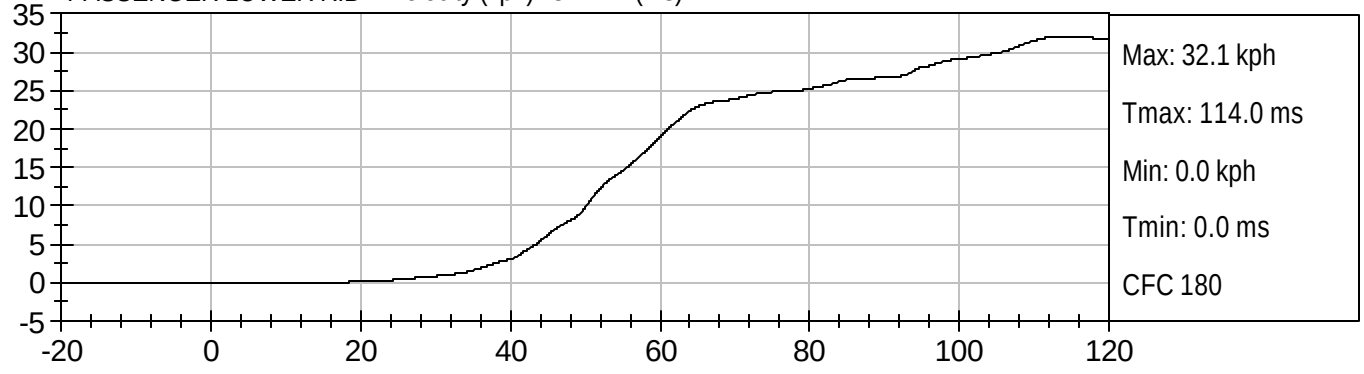
PASSENGER UPPER RIB Y Velocity (kph) vs TIME (ms)



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



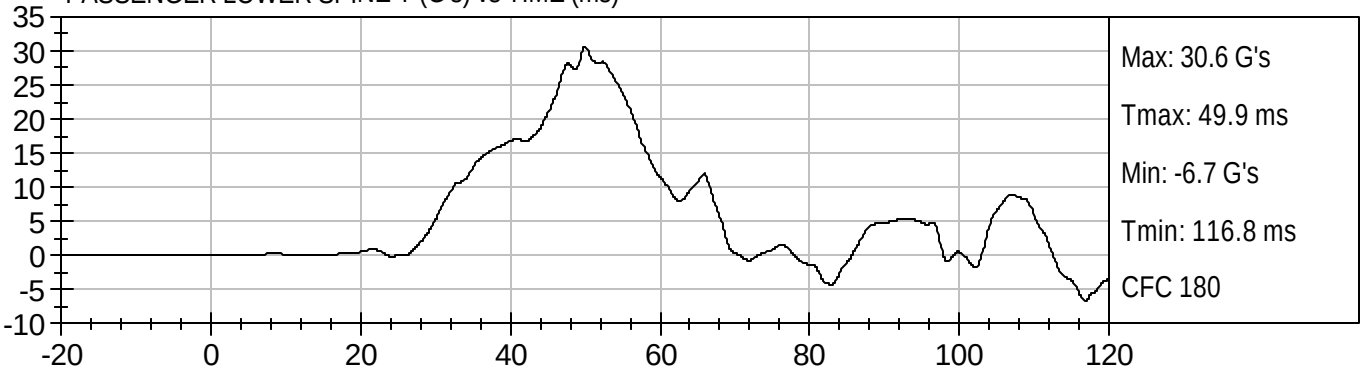
PASSENGER LOWER RIB Y Velocity (kph) vs TIME (ms)



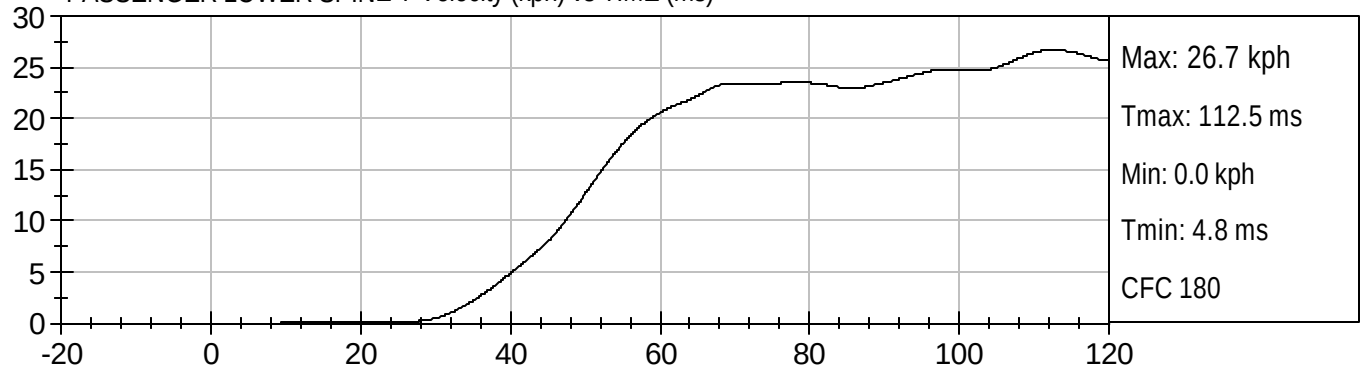
90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)

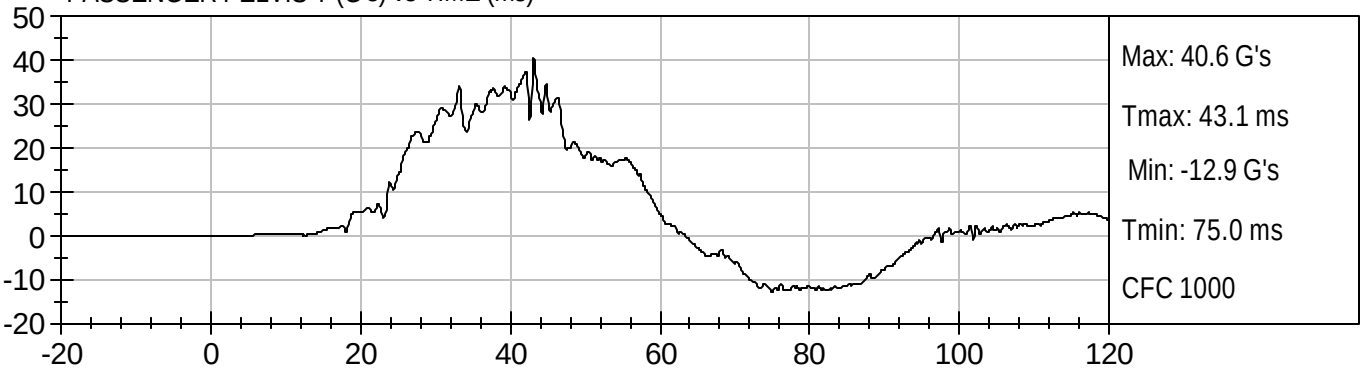
PASSENGER LOWER SPINE Y (G's) vs TIME (ms)



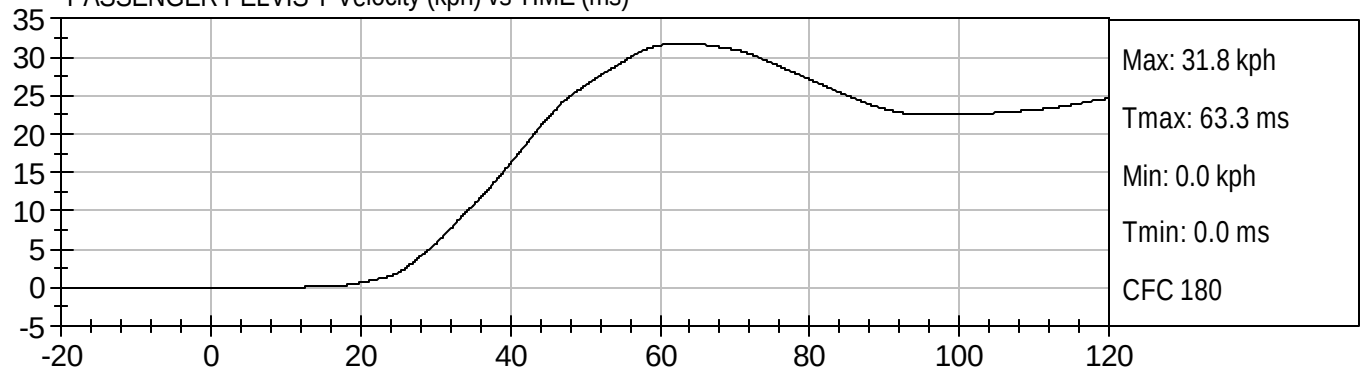
PASSENGER LOWER SPINE Y Velocity (kph) vs TIME (ms)



PASSENGER PELVIS Y (G's) vs TIME (ms)



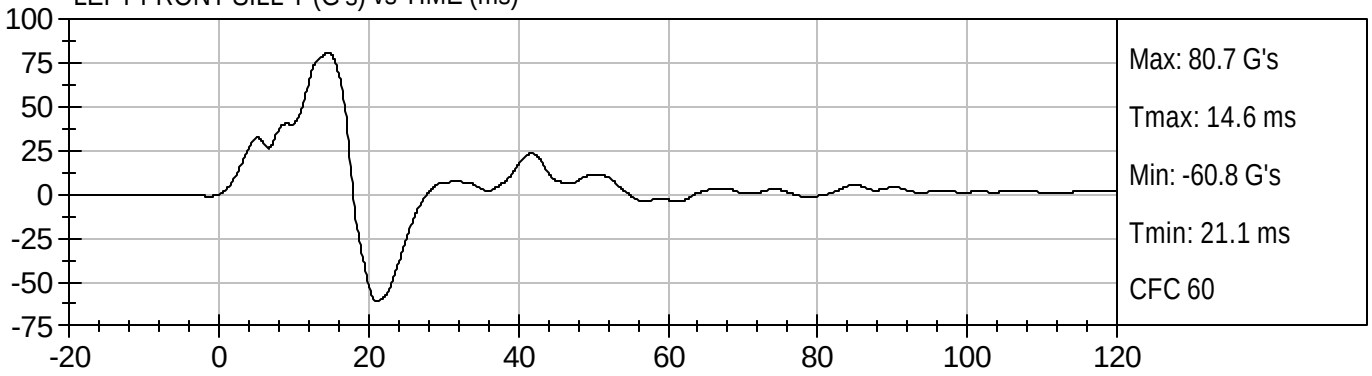
PASSENGER PELVIS Y Velocity (kph) vs TIME (ms)



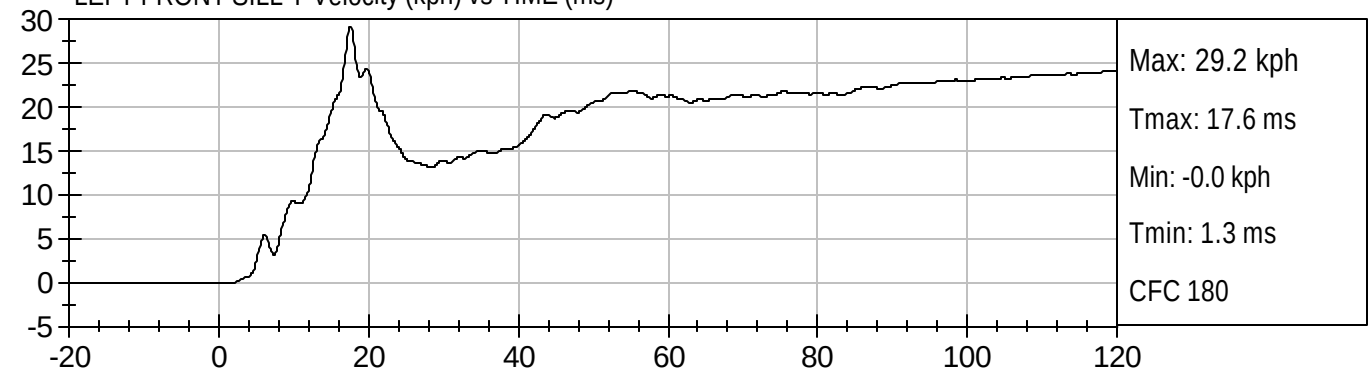
90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)

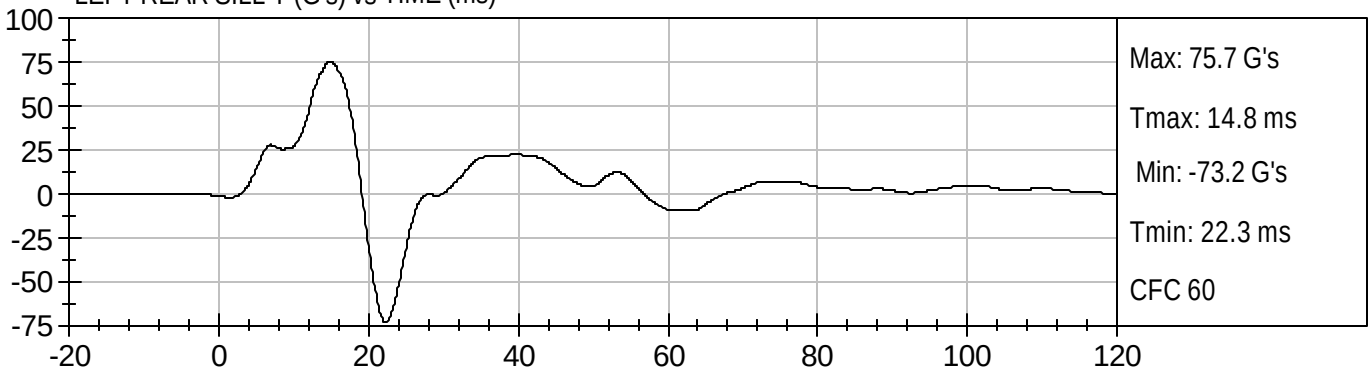
LEFT FRONT SILL Y (G's) vs TIME (ms)



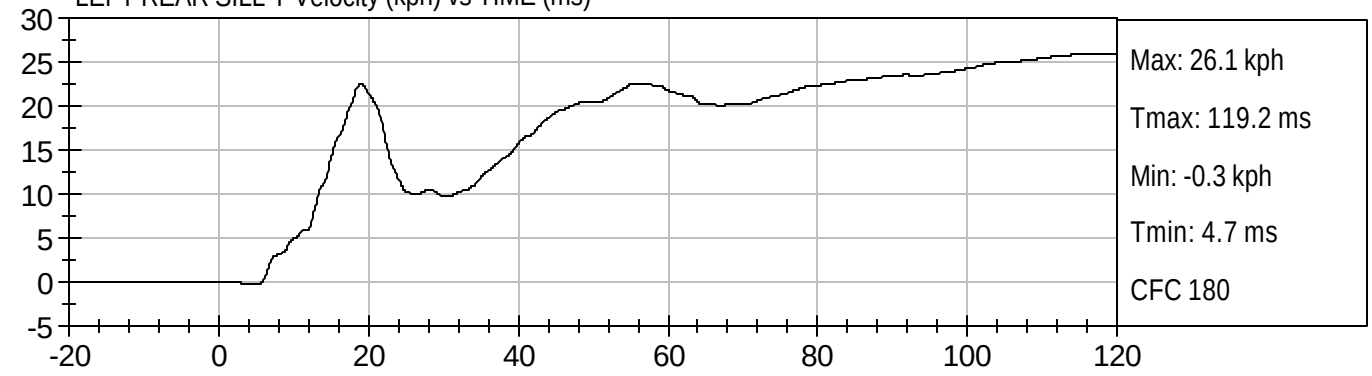
LEFT FRONT SILL Y Velocity (kph) vs TIME (ms)



LEFT REAR SILL Y (G's) vs TIME (ms)

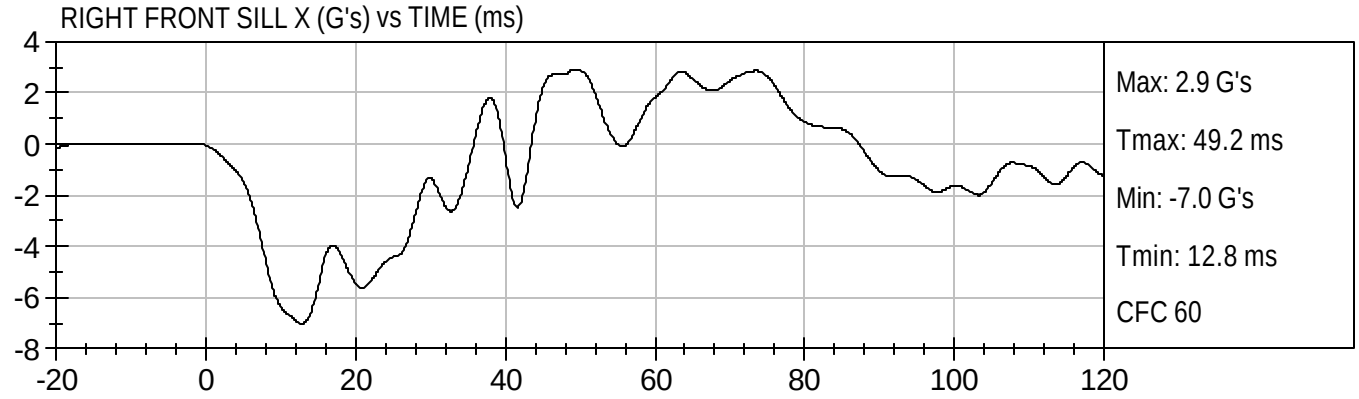


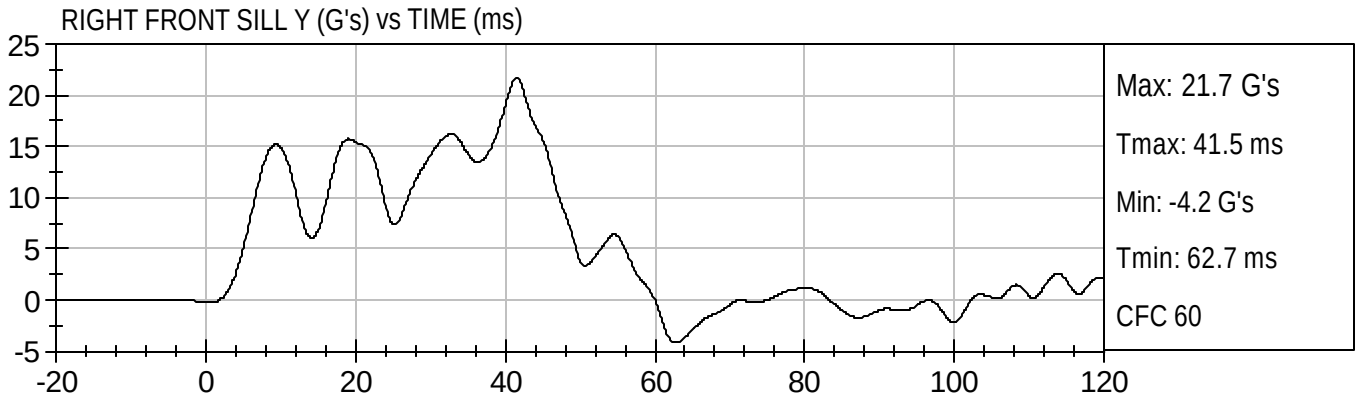
LEFT REAR SILL Y Velocity (kph) vs TIME (ms)

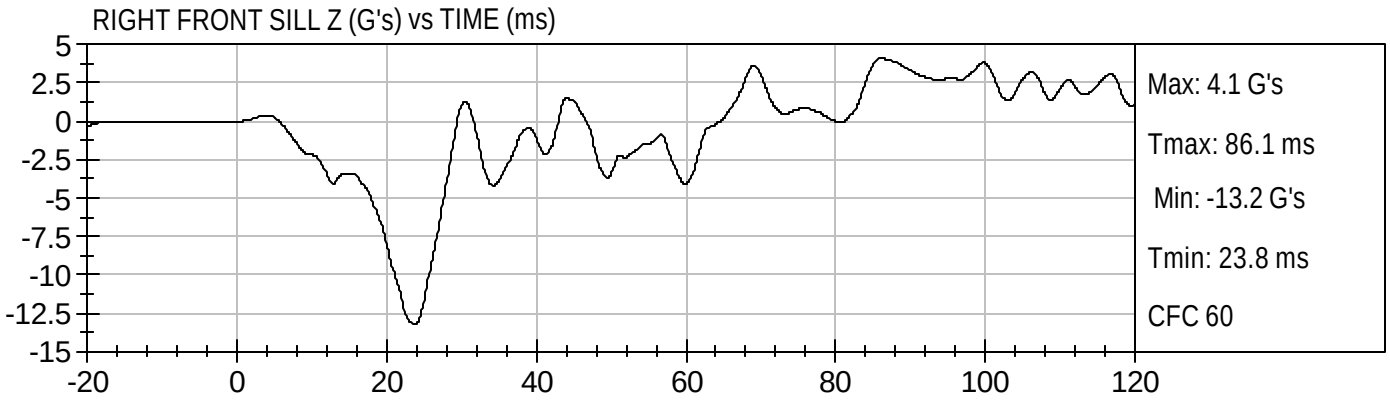


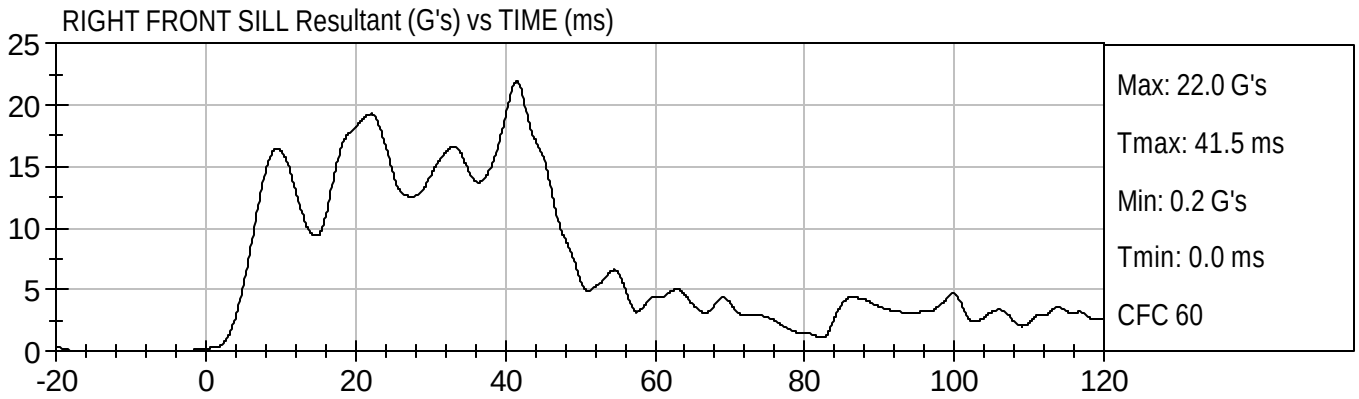
90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)



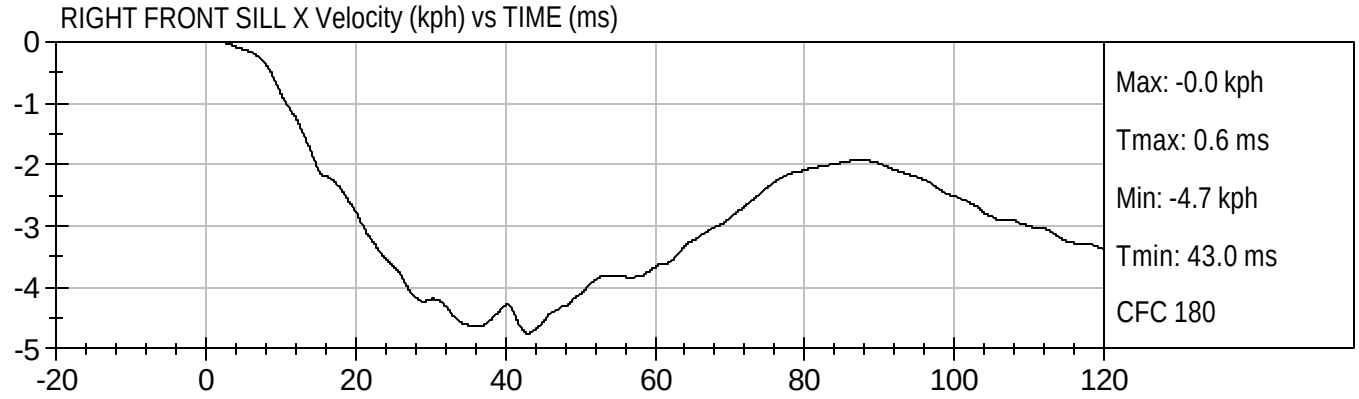


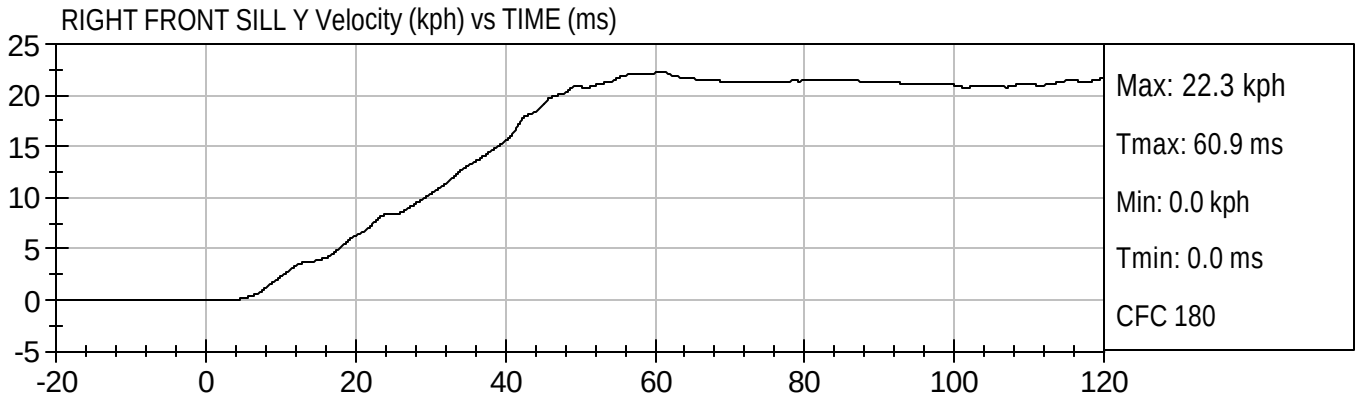


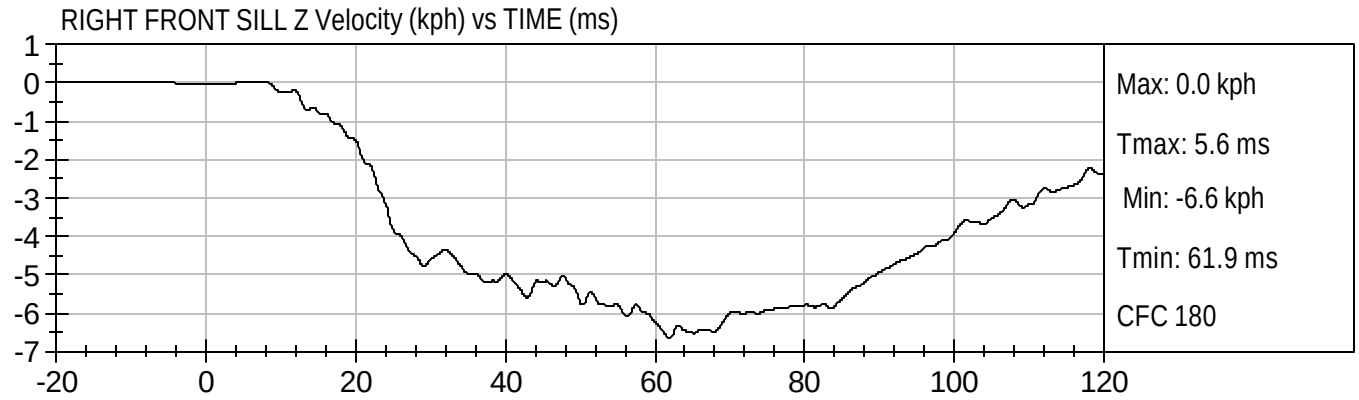


90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)



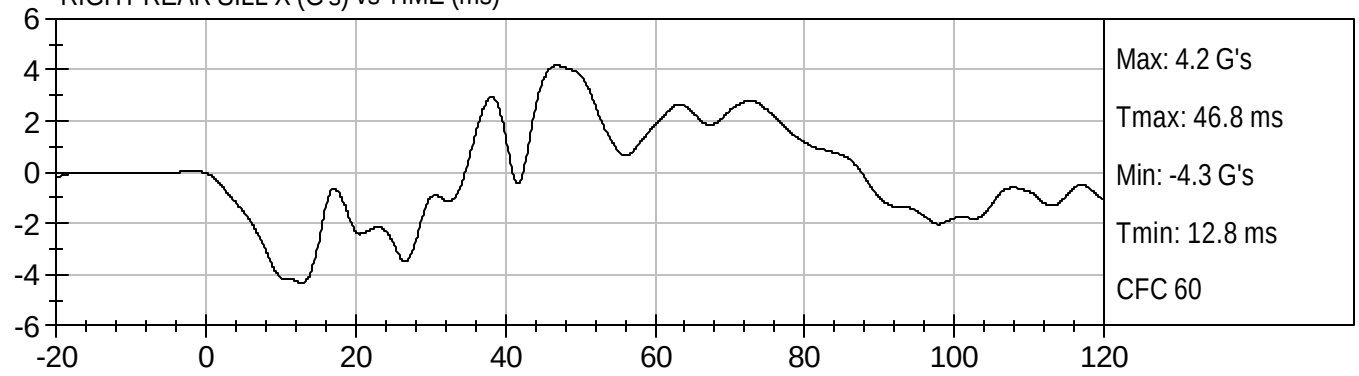




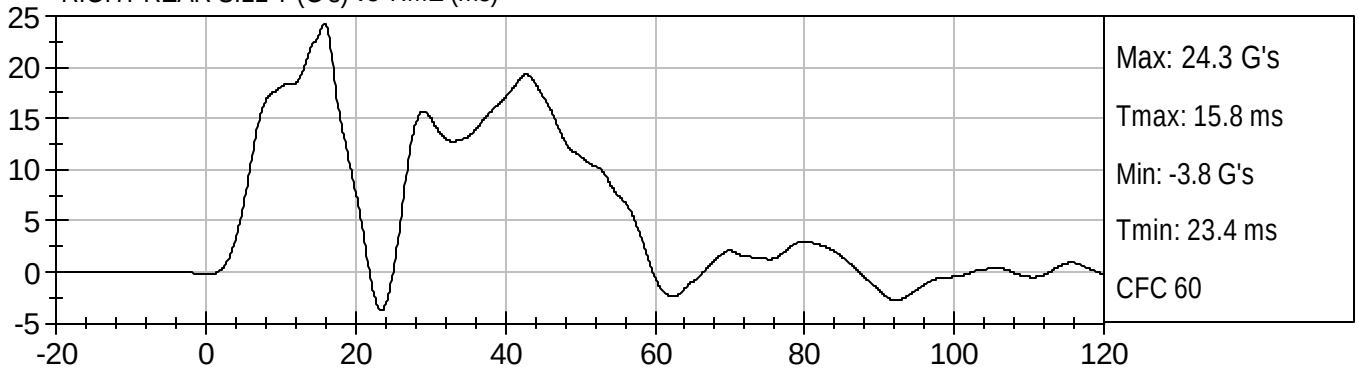
90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)

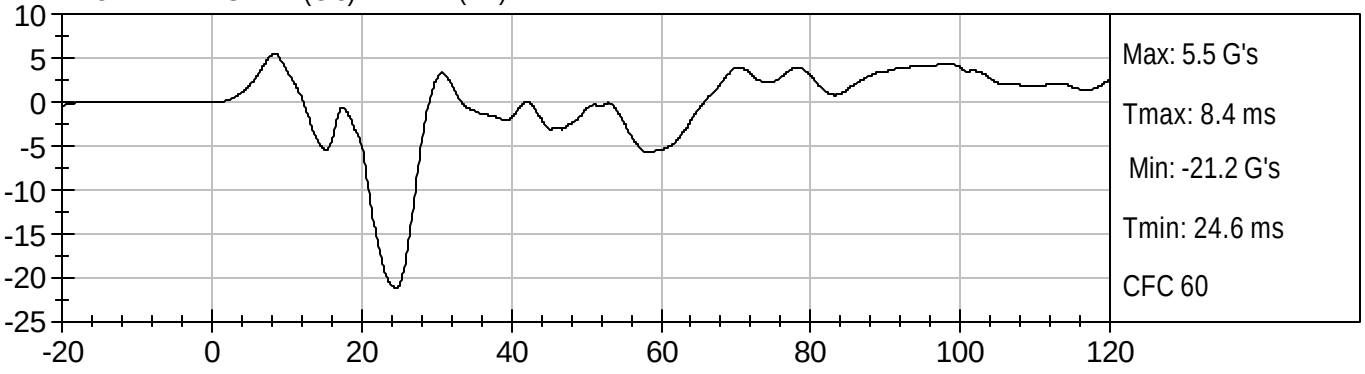
RIGHT REAR SILL X (G's) vs TIME (ms)



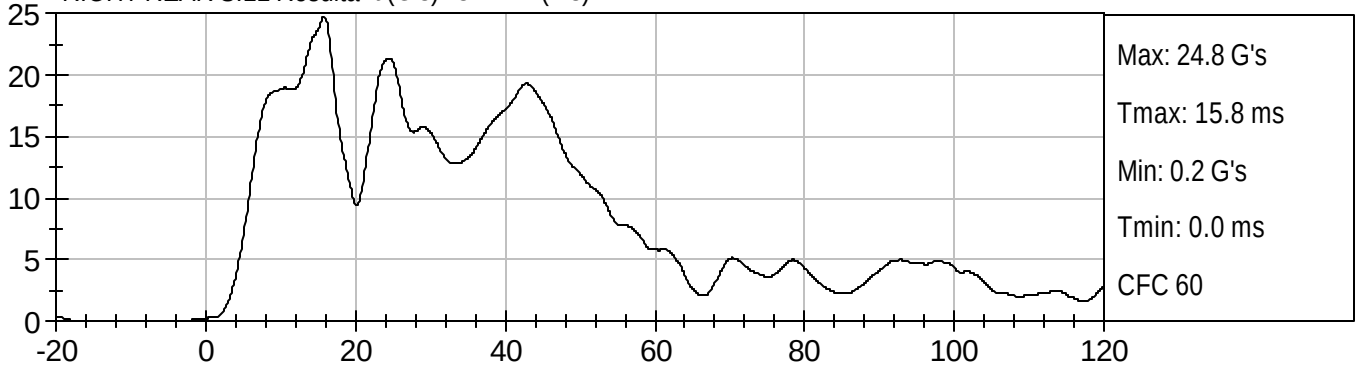
RIGHT REAR SILL Y (G's) vs TIME (ms)



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

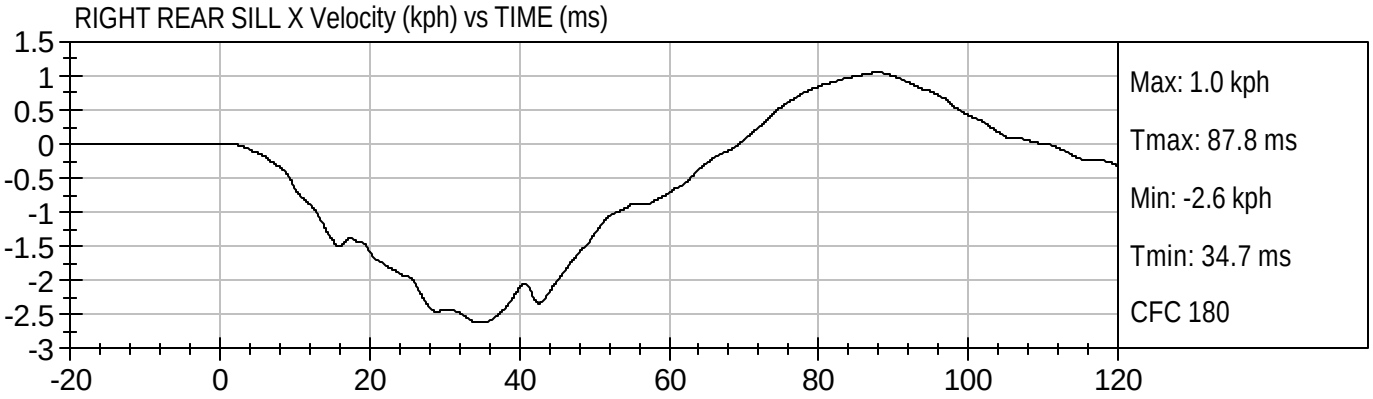


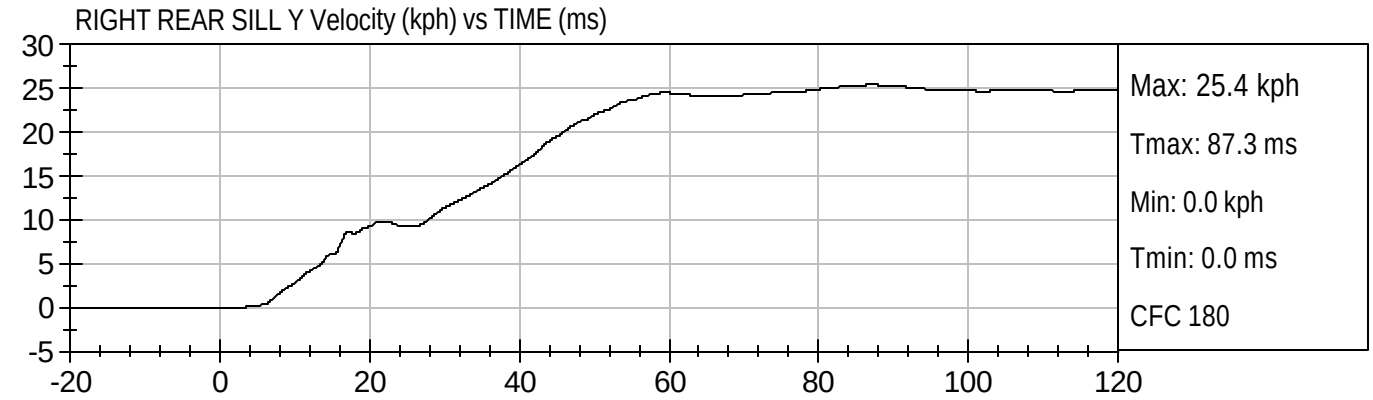
RIGHT REAR SILL Resultant (G's) vs TIME (ms)

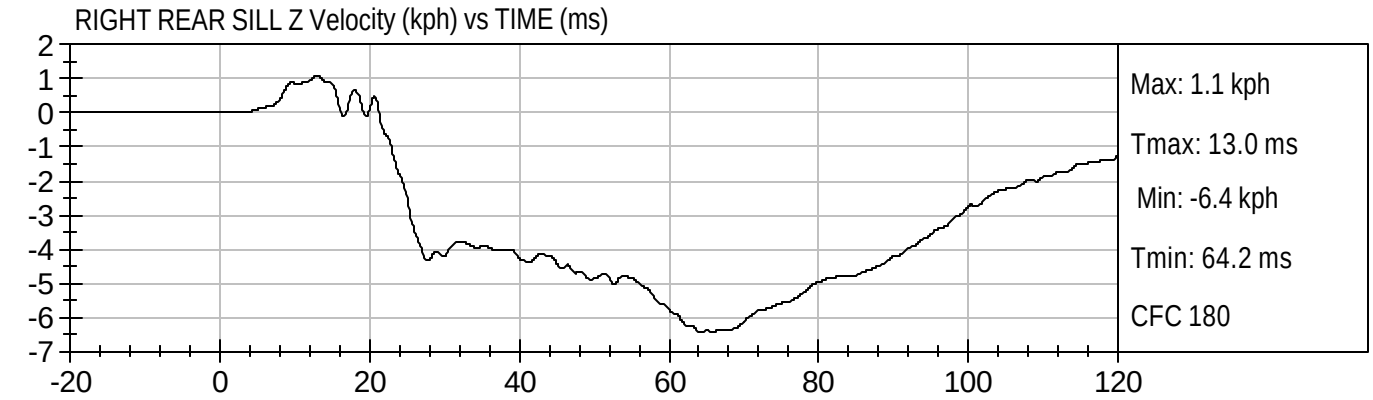


90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)



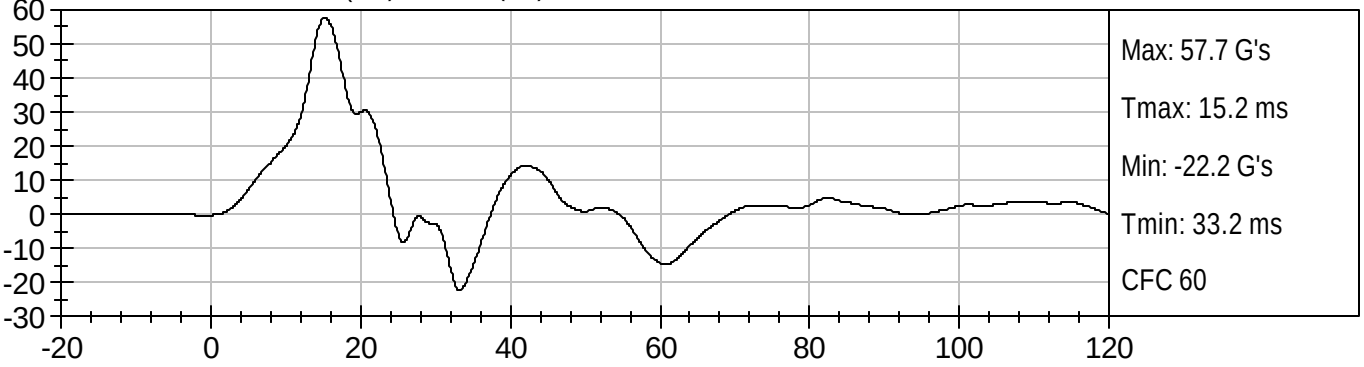




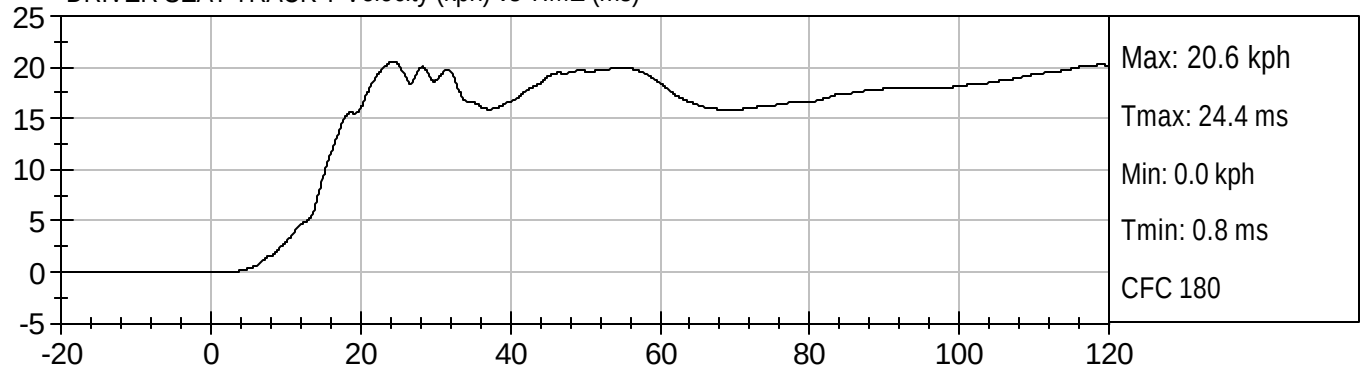
90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)

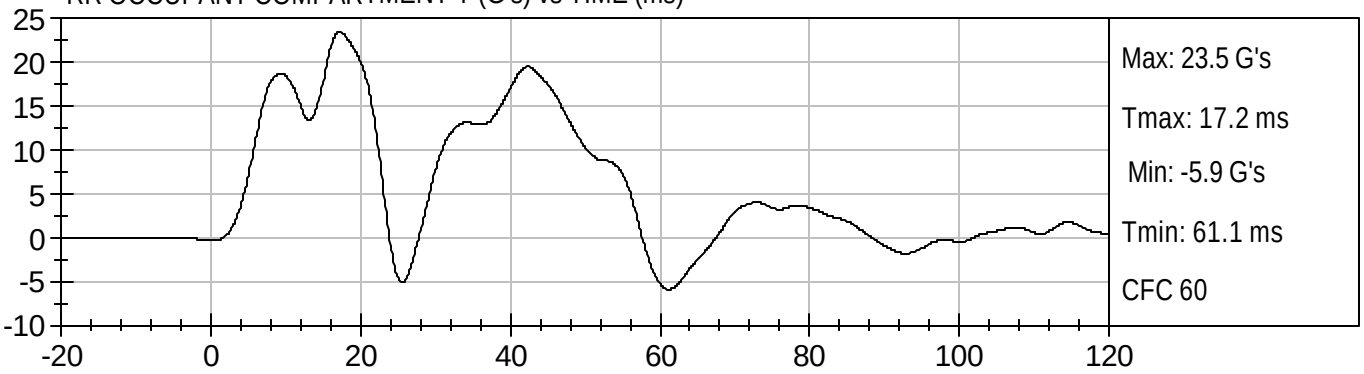
DRIVER SEAT TRACK Y (G's) vs TIME (ms)



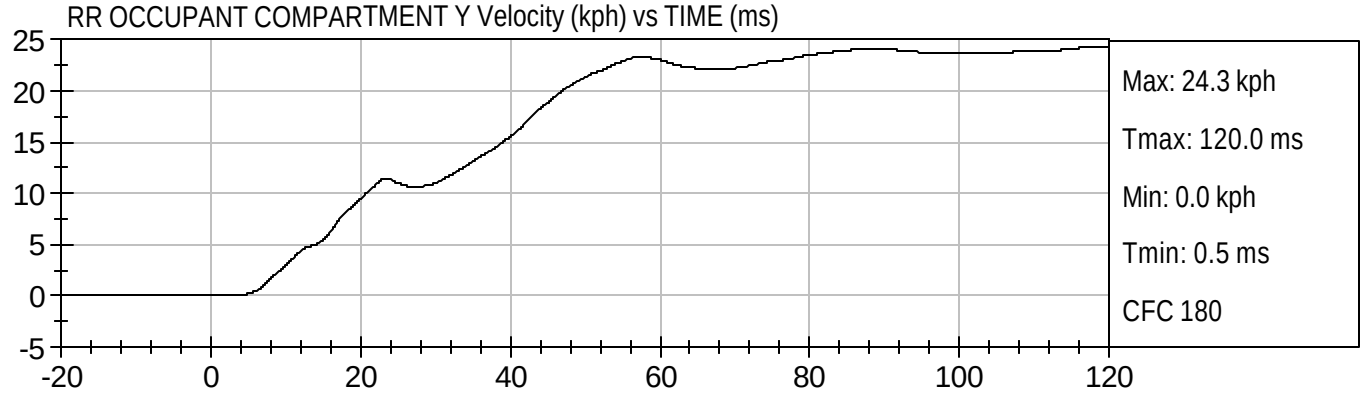
DRIVER SEAT TRACK Y Velocity (kph) vs TIME (ms)



RR OCCUPANT COMPARTMENT Y (G's) vs TIME (ms)

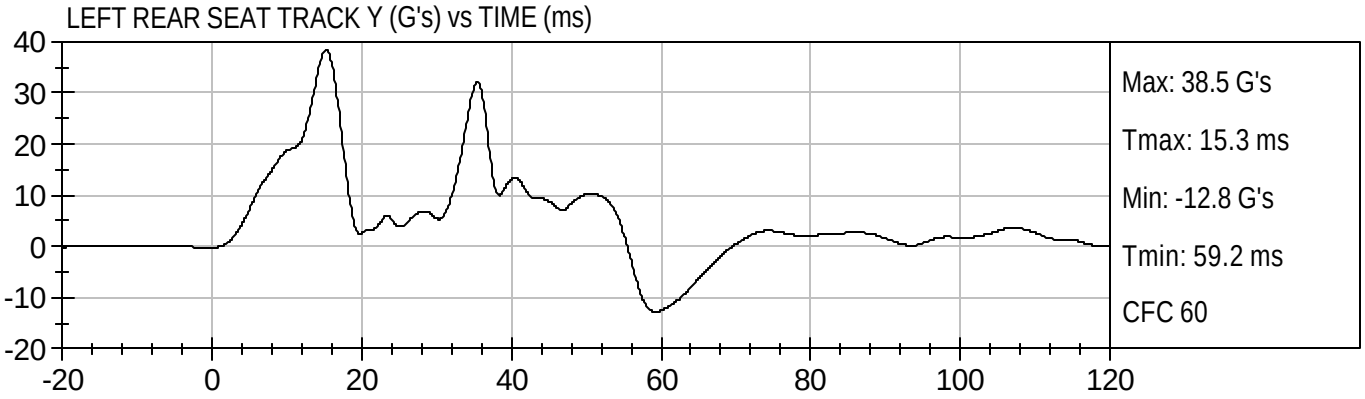


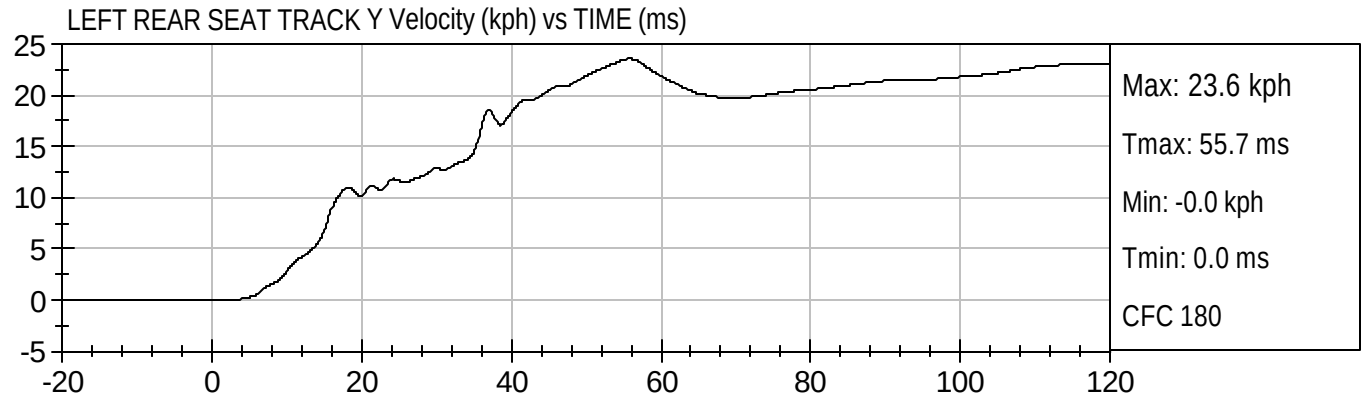
RR OCCUPANT COMPARTMENT Y Velocity (kph) vs TIME (ms)



90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)

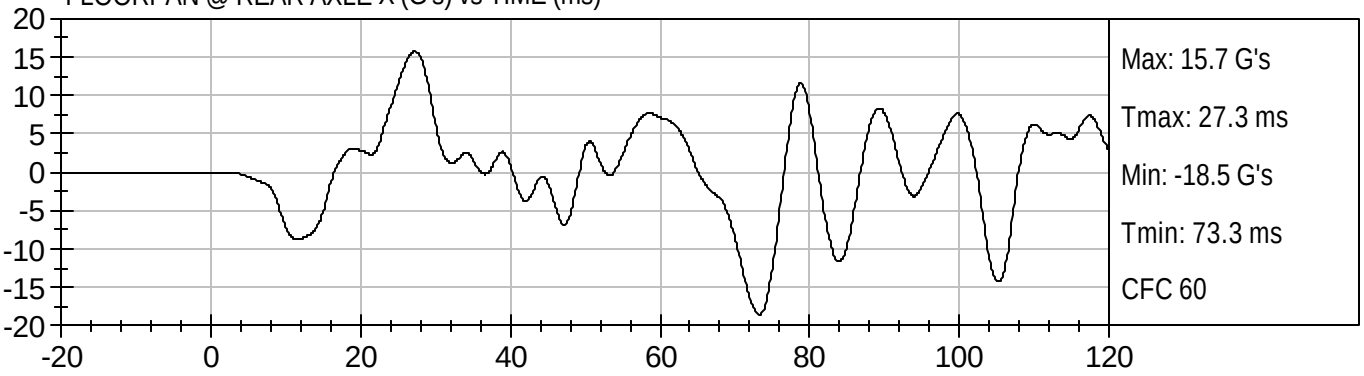




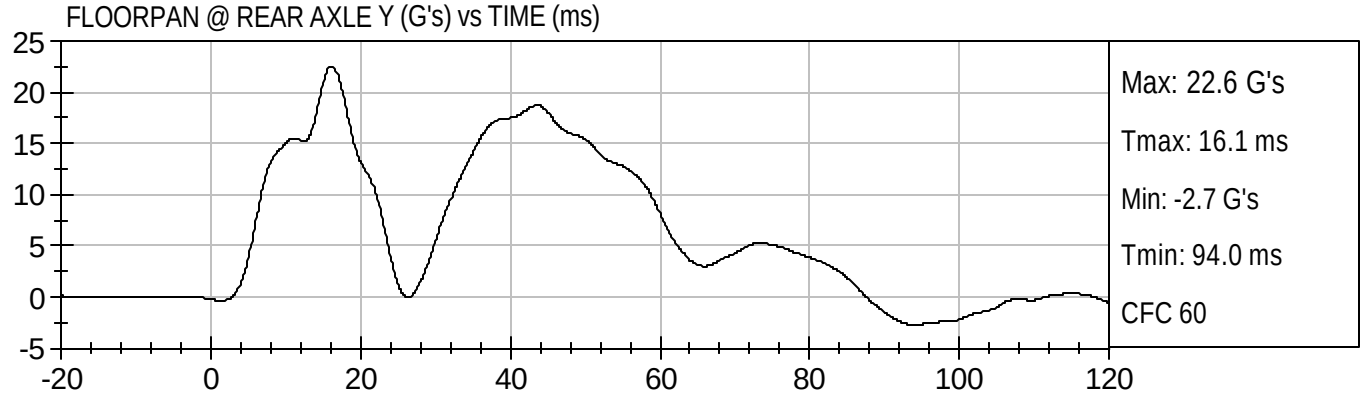
90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)

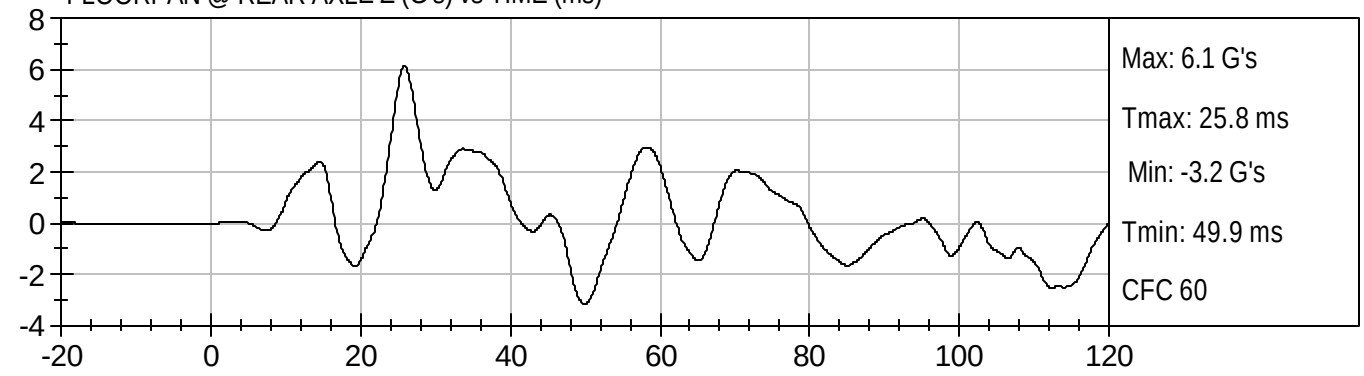
FLOORPAN @ REAR AXLE X (G's) vs TIME (ms)



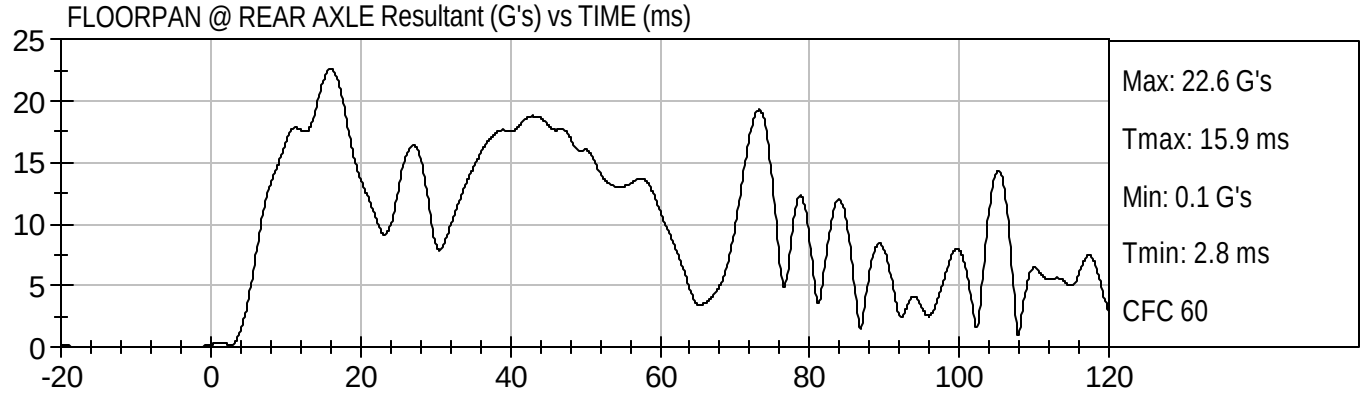
FLOORPAN @ REAR AXLE Y (G's) vs TIME (ms)



FLOORPAN @ REAR AXLE Z (G's) vs TIME (ms)

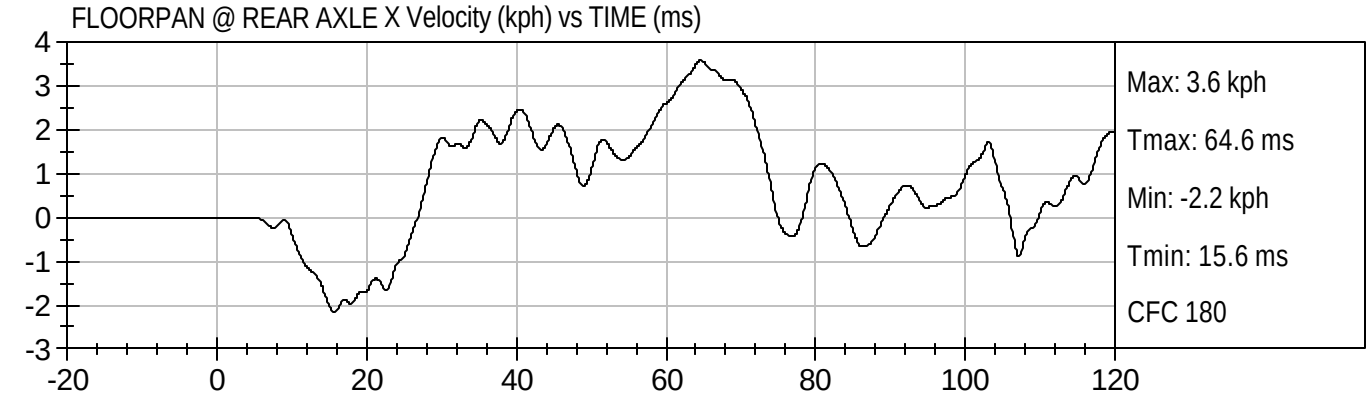


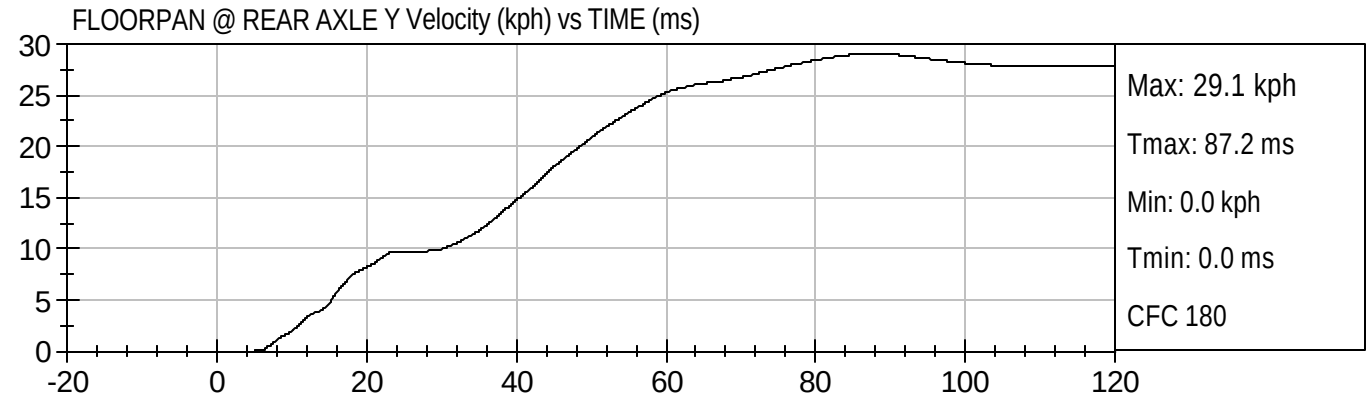
FLOORPAN @ REAR AXLE Resultant (G's) vs TIME (ms)

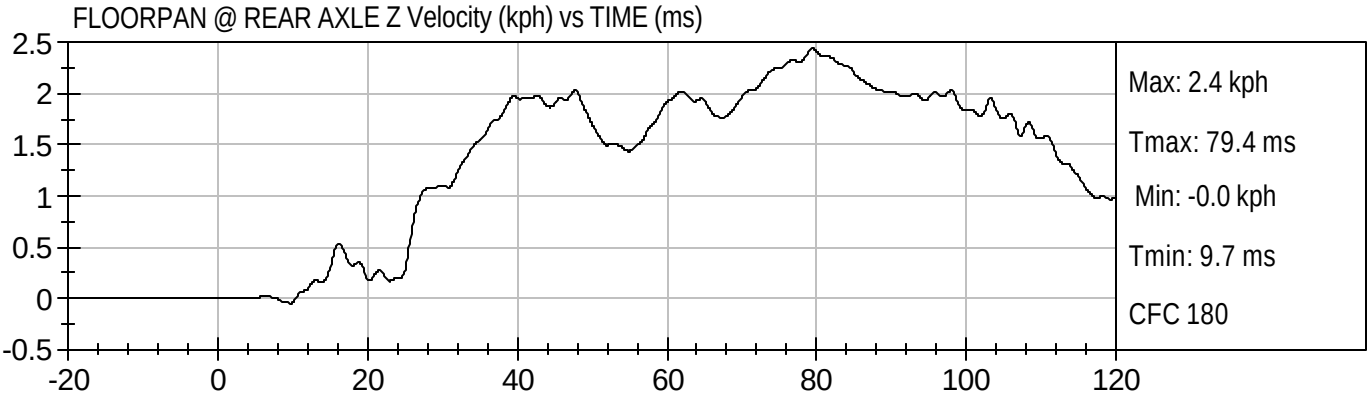


90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)



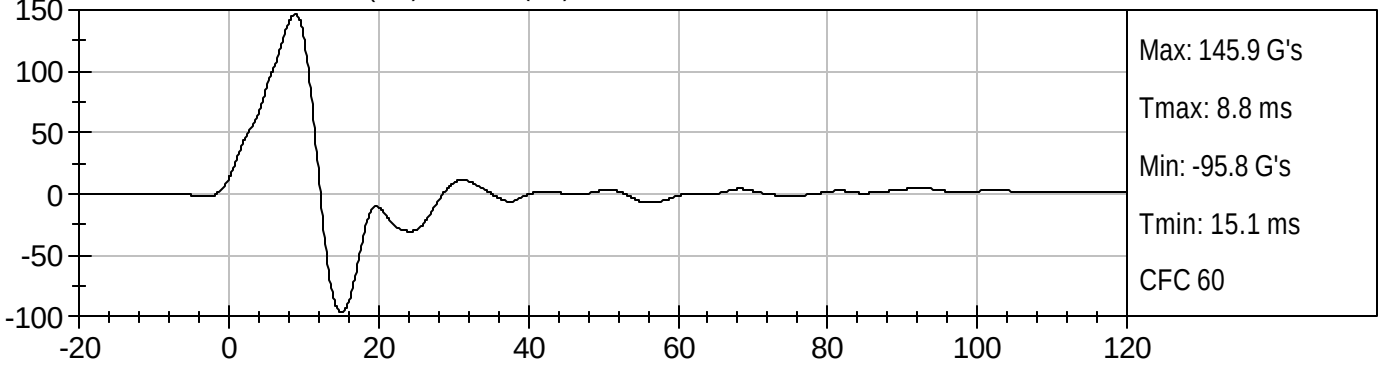




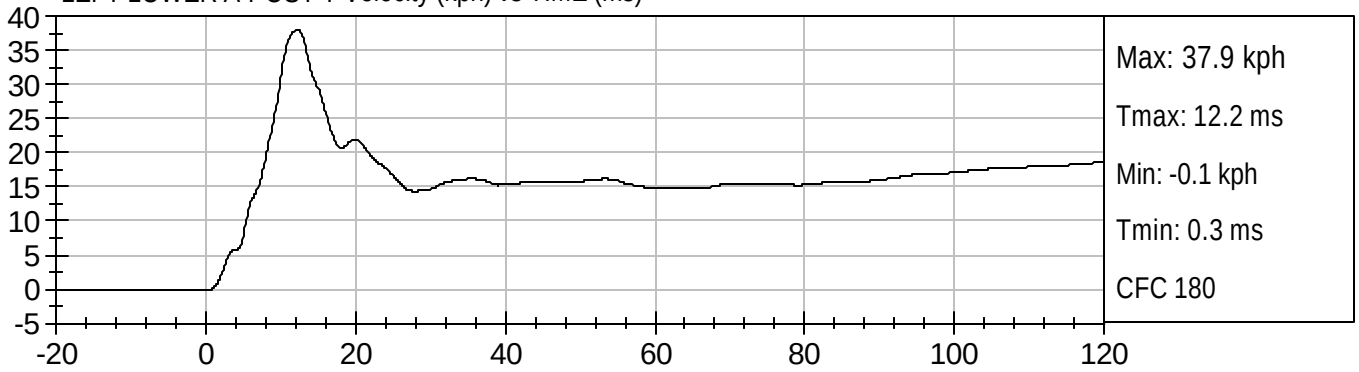
90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)

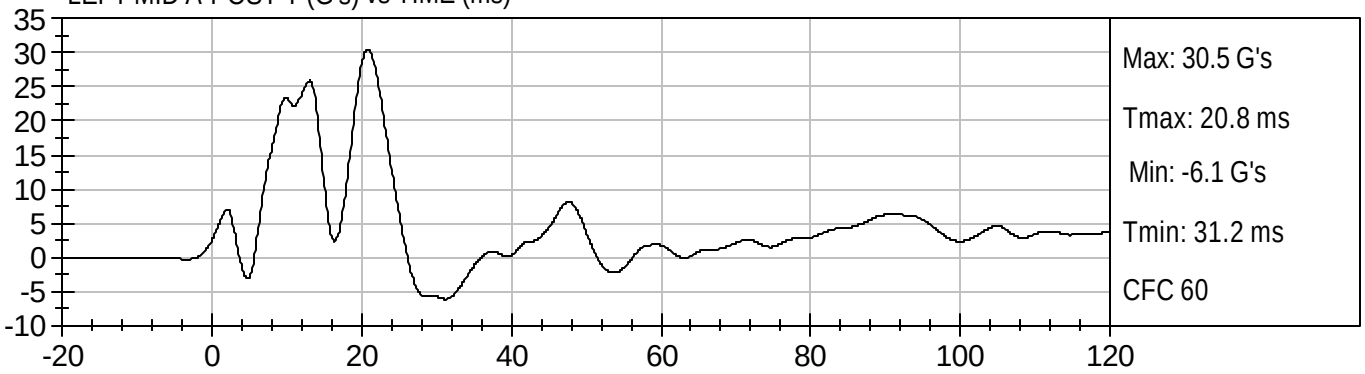
LEFT LOWER A-POST Y (G's) vs TIME (ms)



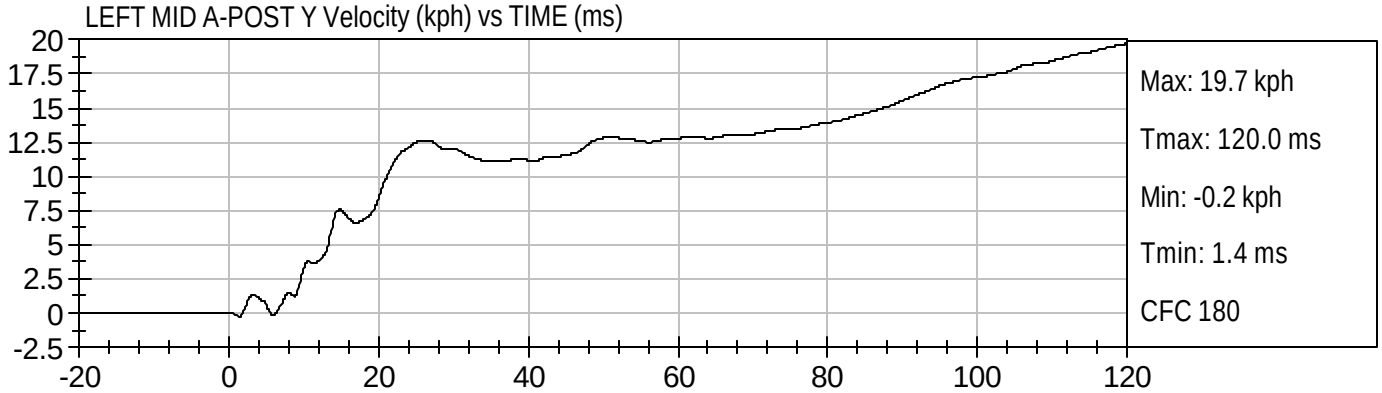
LEFT LOWER A-POST Y Velocity (kph) vs TIME (ms)



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



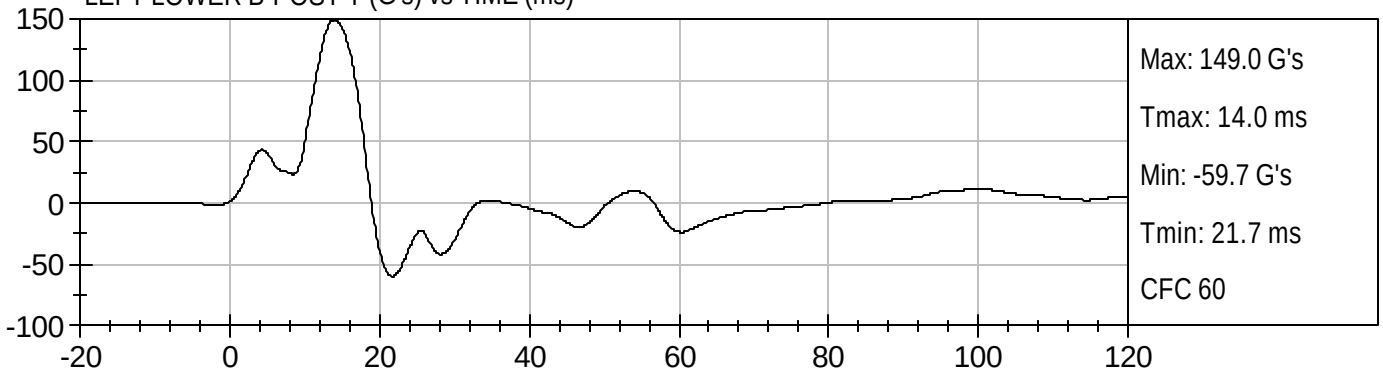
LEFT MID A-POST Y Velocity (kph) vs TIME (ms)



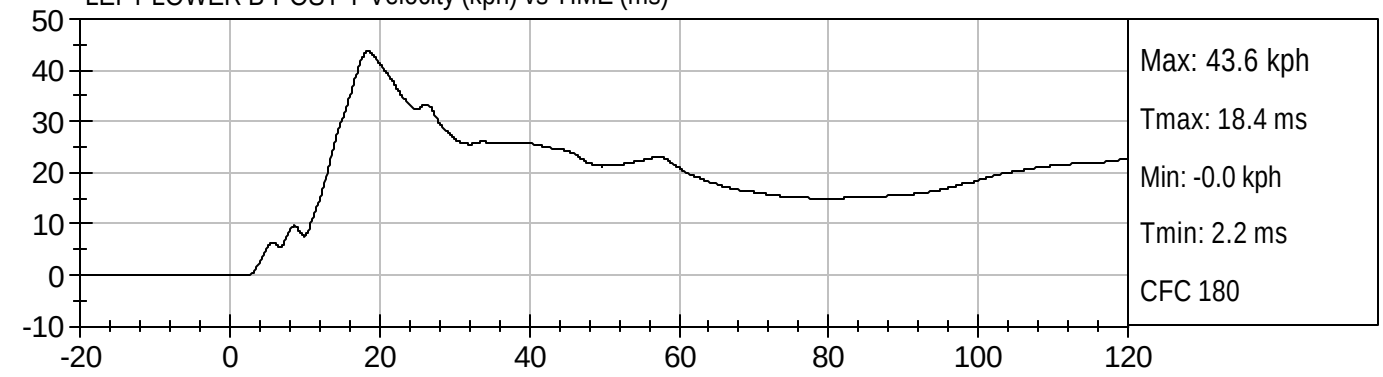
90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)

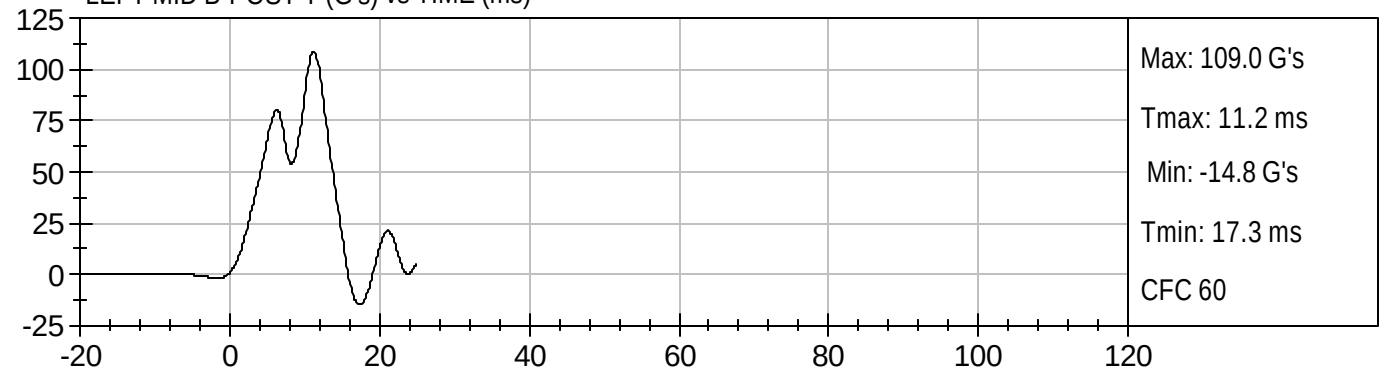
LEFT LOWER B-POST Y (G's) vs TIME (ms)



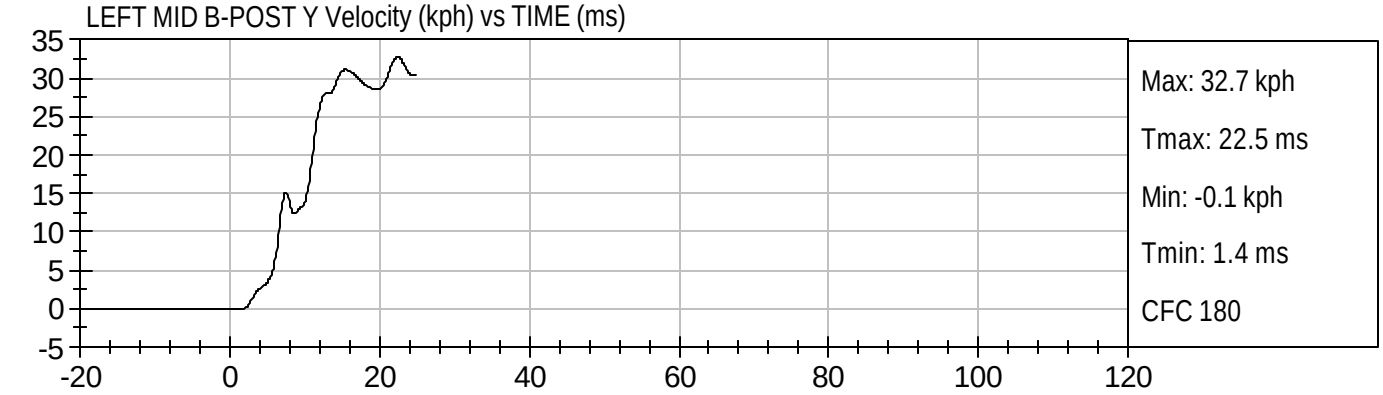
LEFT LOWER B-POST Y Velocity (kph) vs TIME (ms)



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



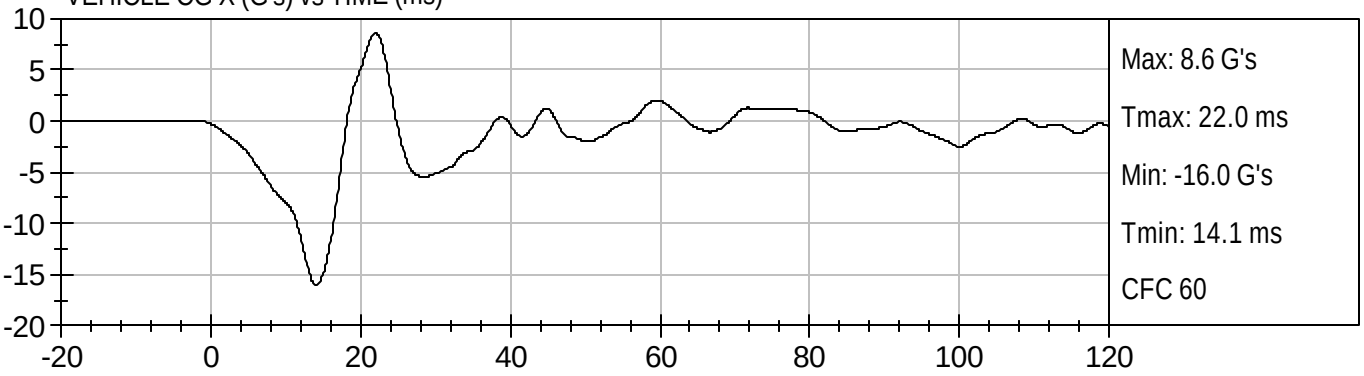
LEFT MID B-POST Y Velocity (kph) vs TIME (ms)



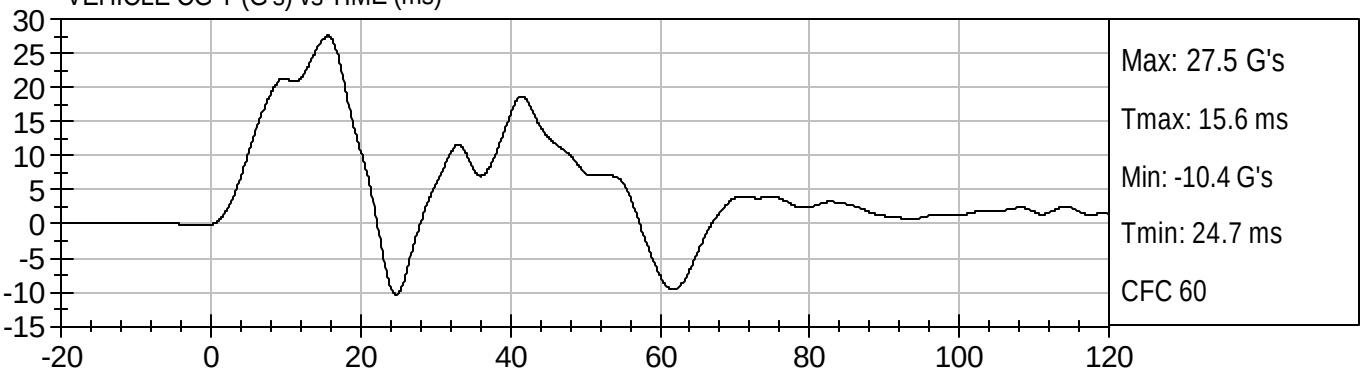
90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)

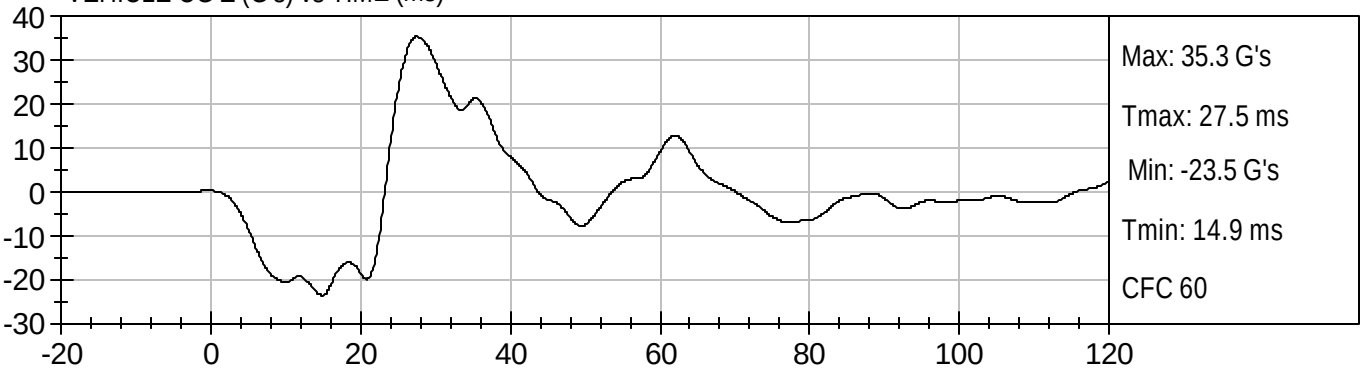
VEHICLE CG X (G's) vs TIME (ms)



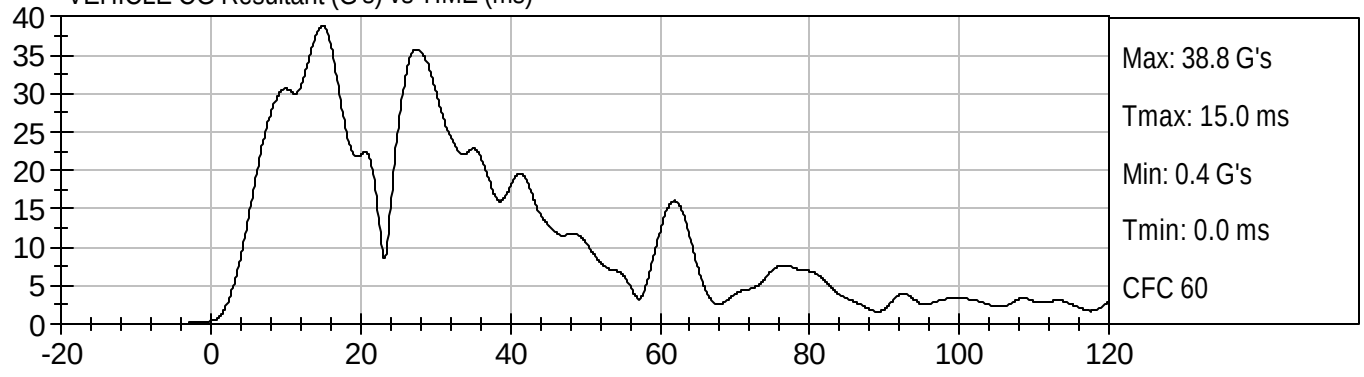
VEHICLE CG Y (G's) vs TIME (ms)



VEHICLE CG Z (G's) vs TIME (ms)

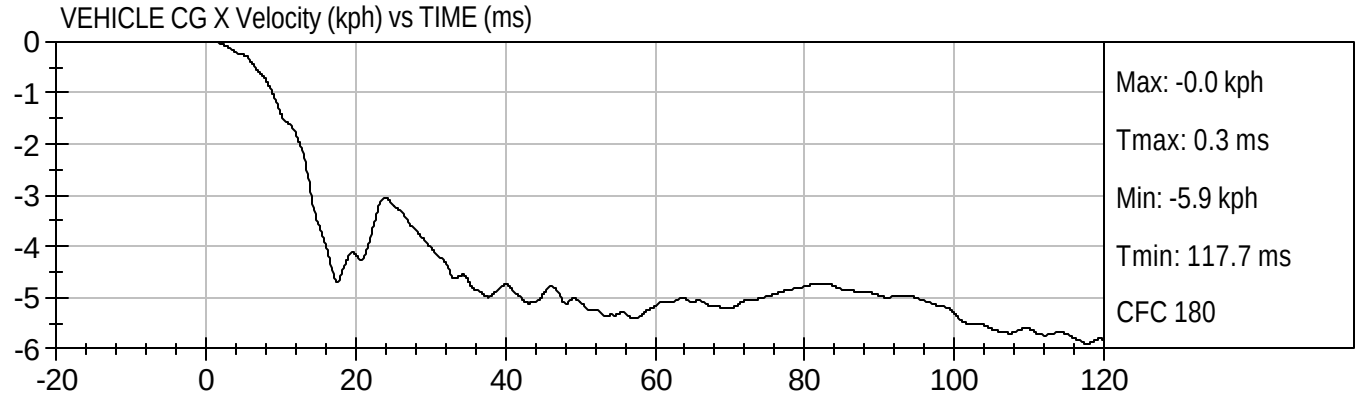


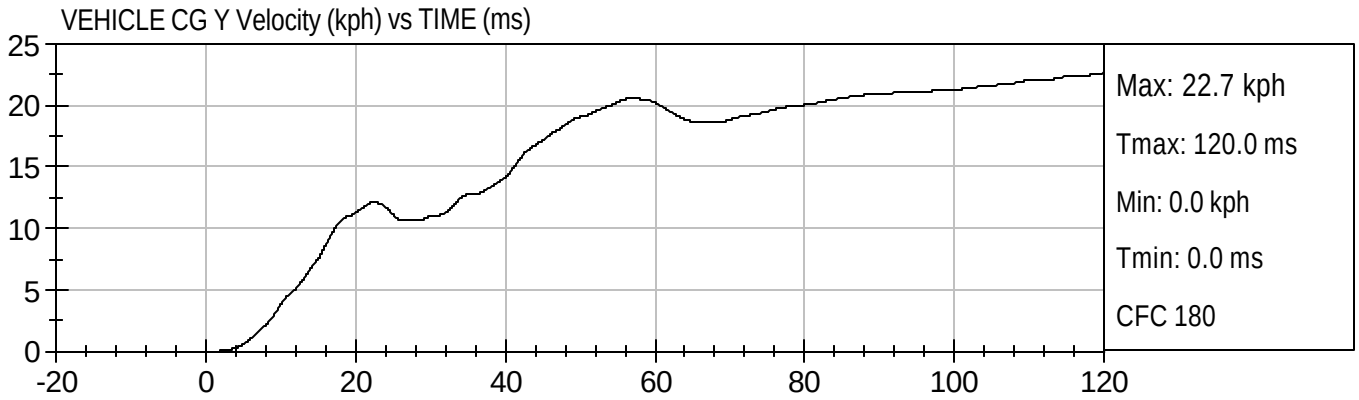
VEHICLE CG Resultant (G's) vs TIME (ms)

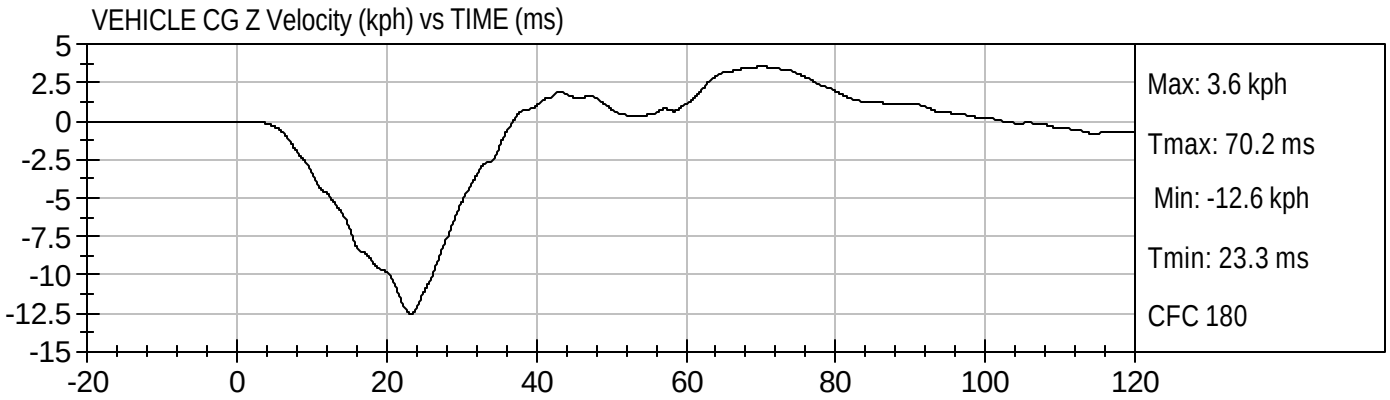


90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)

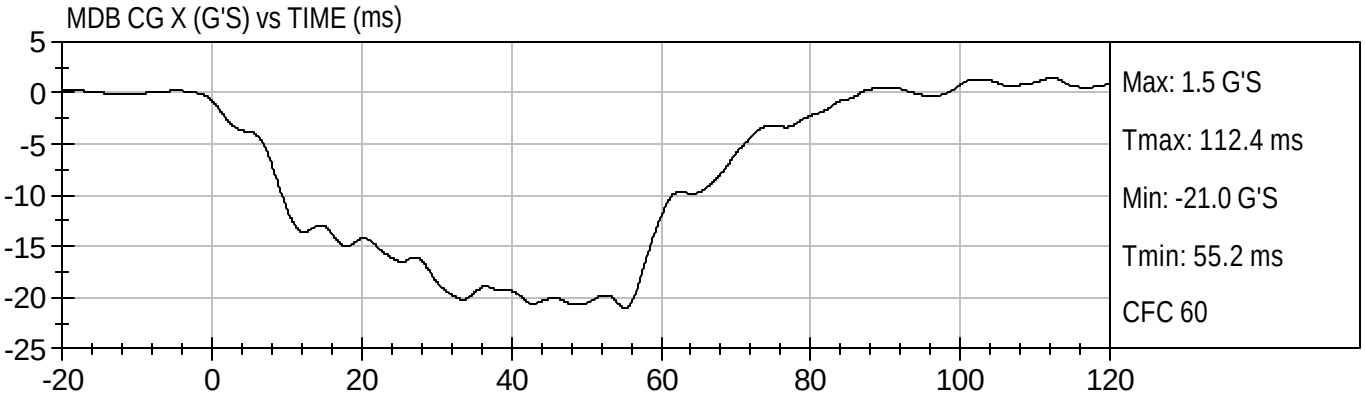


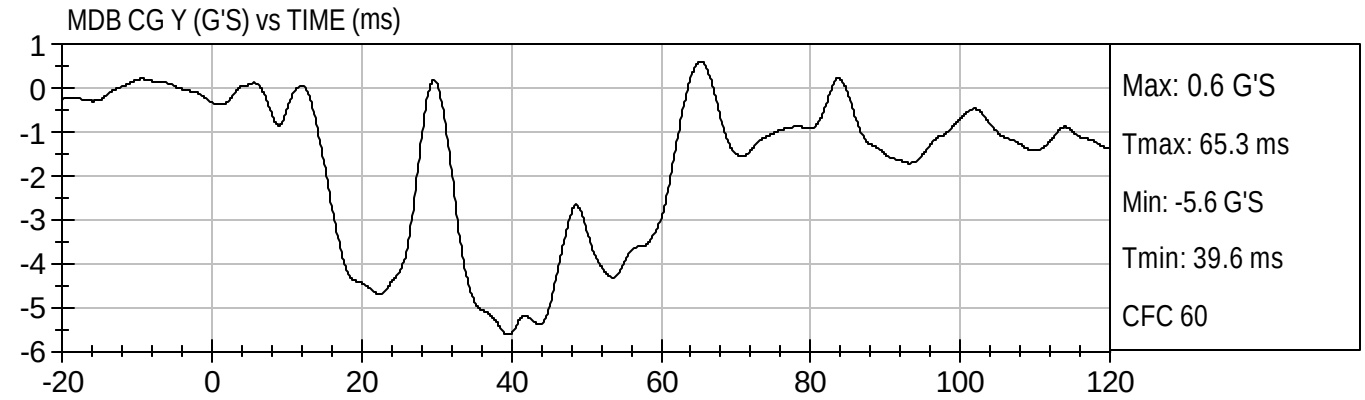


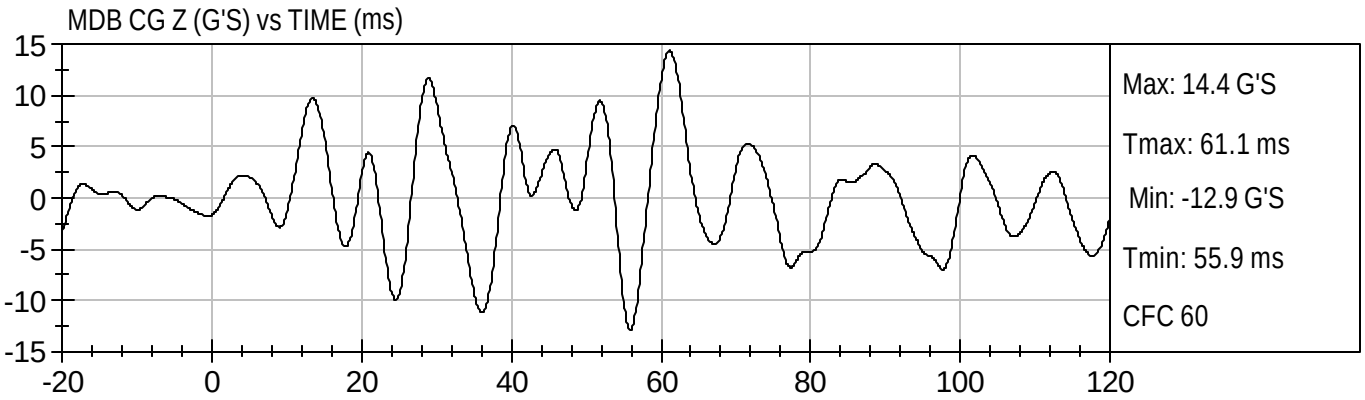


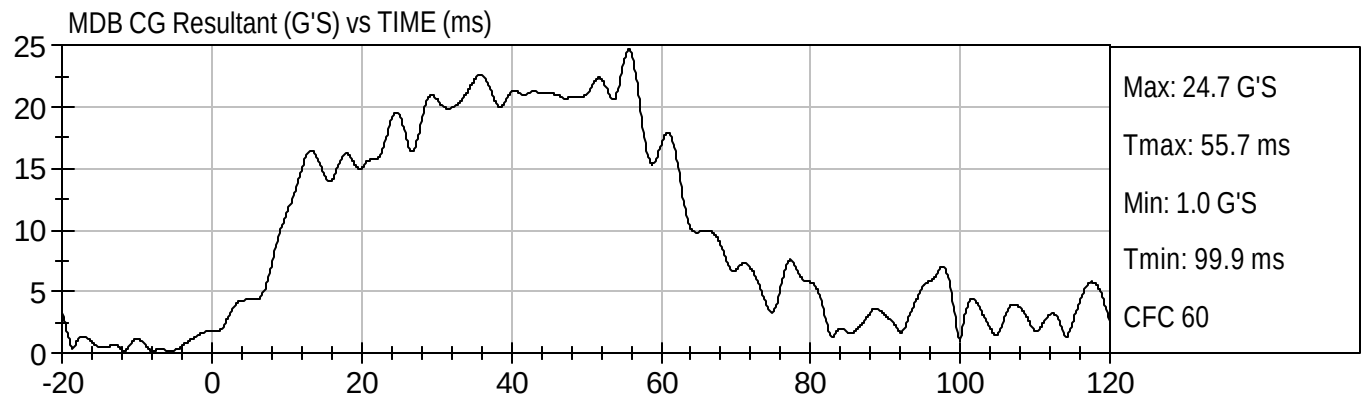
90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)



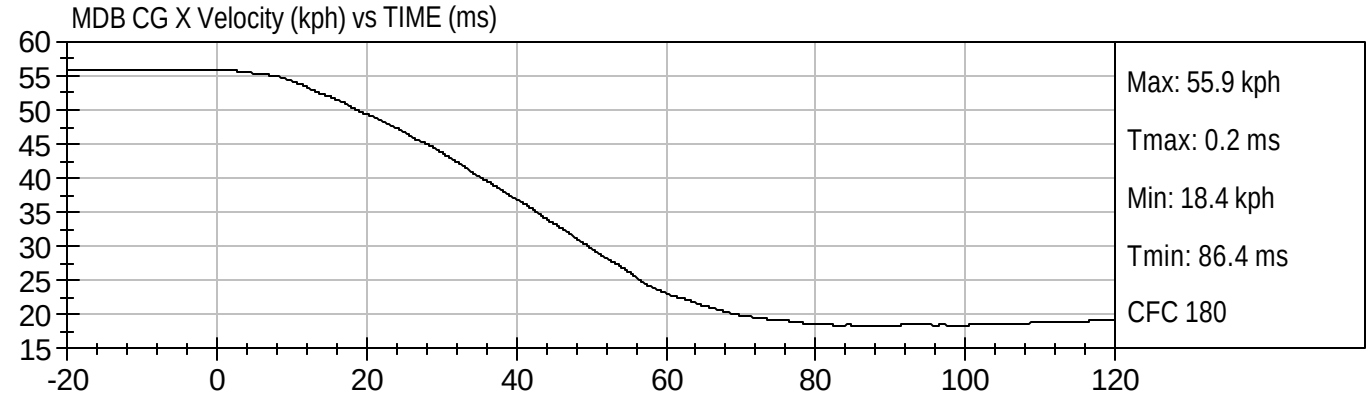


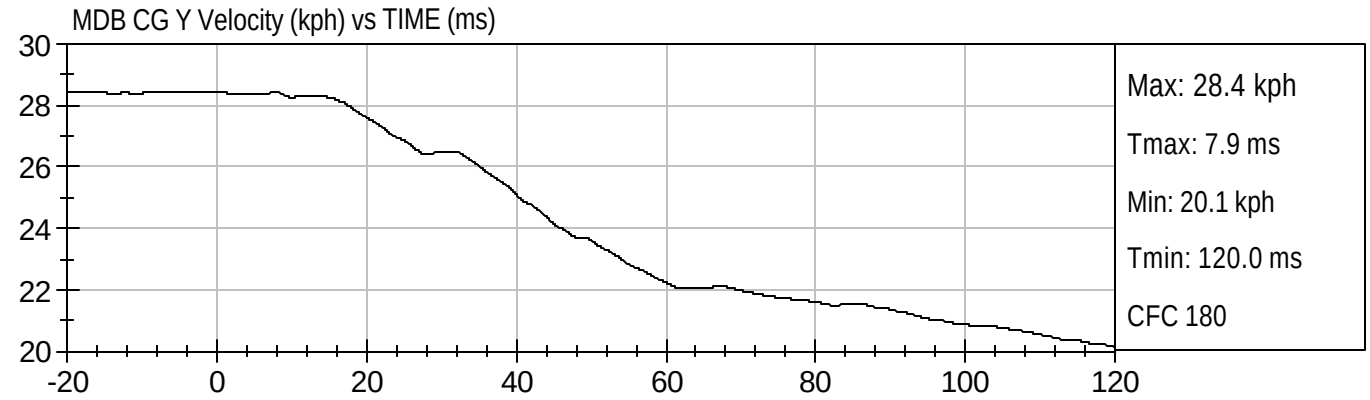


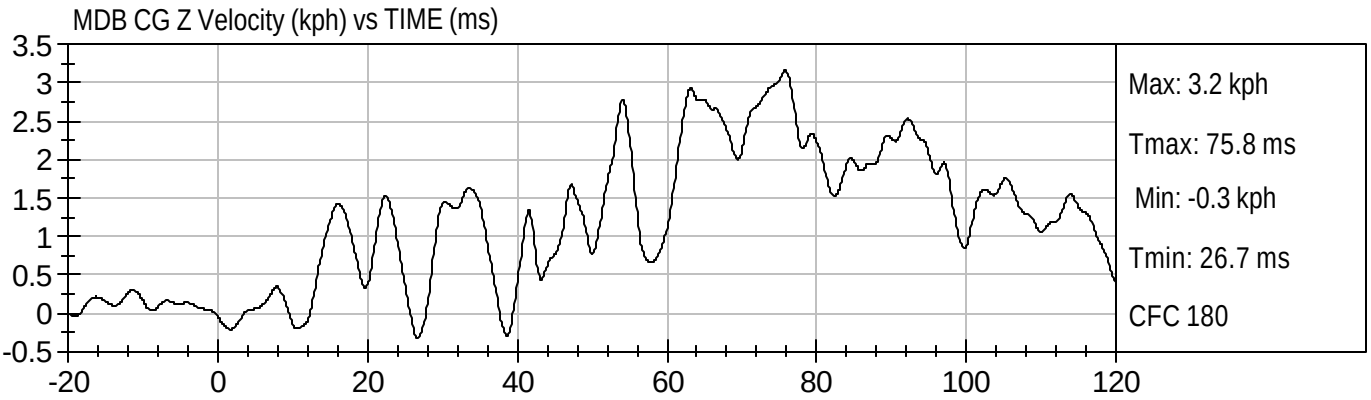


90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)

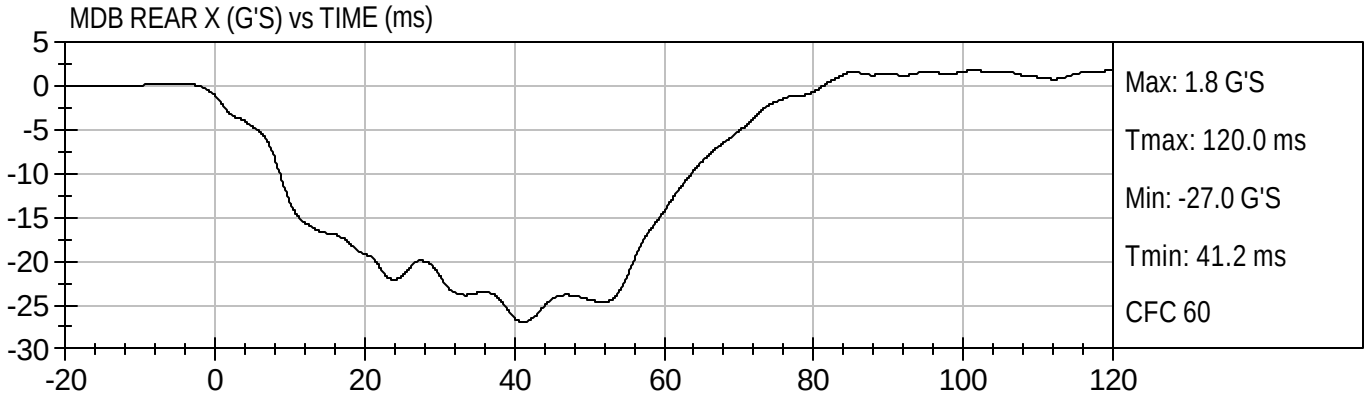


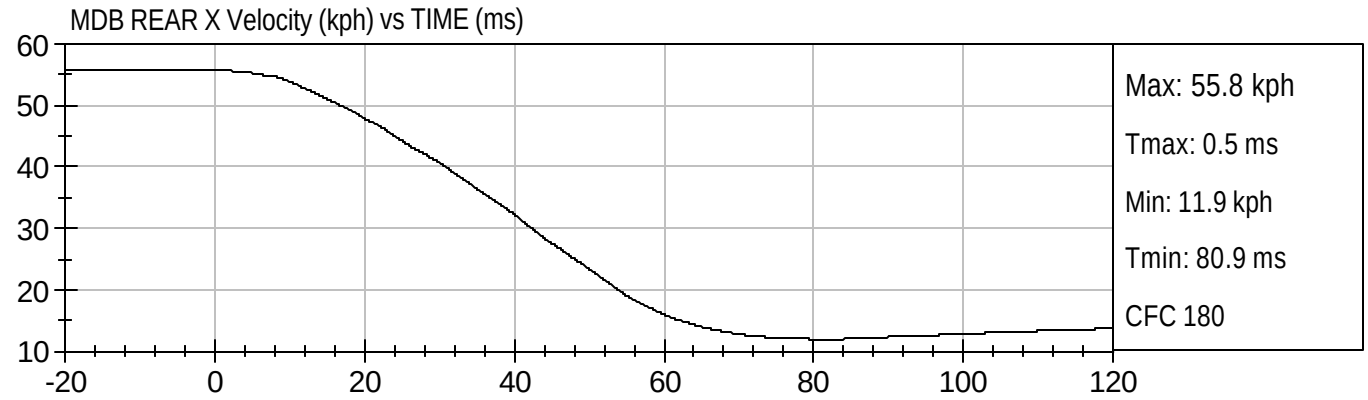


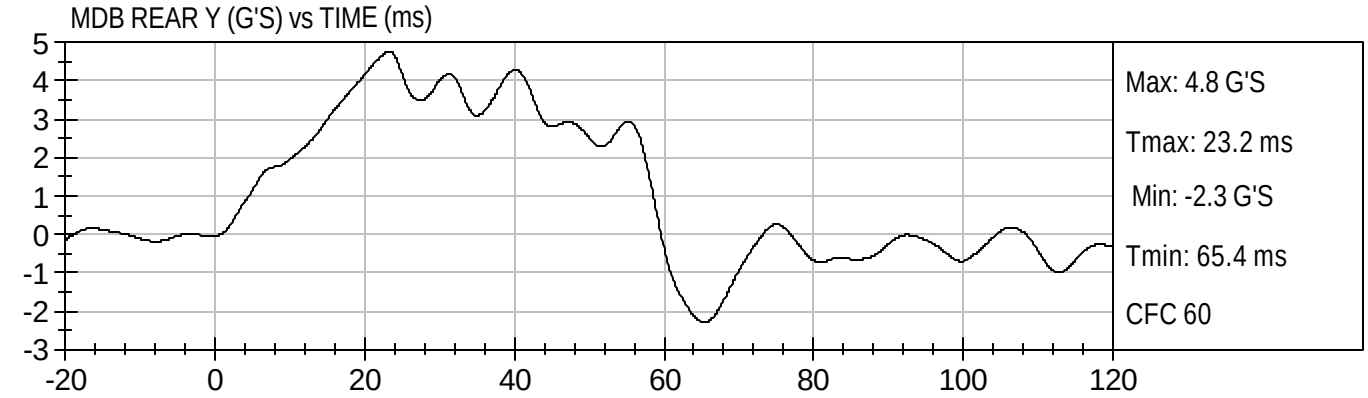


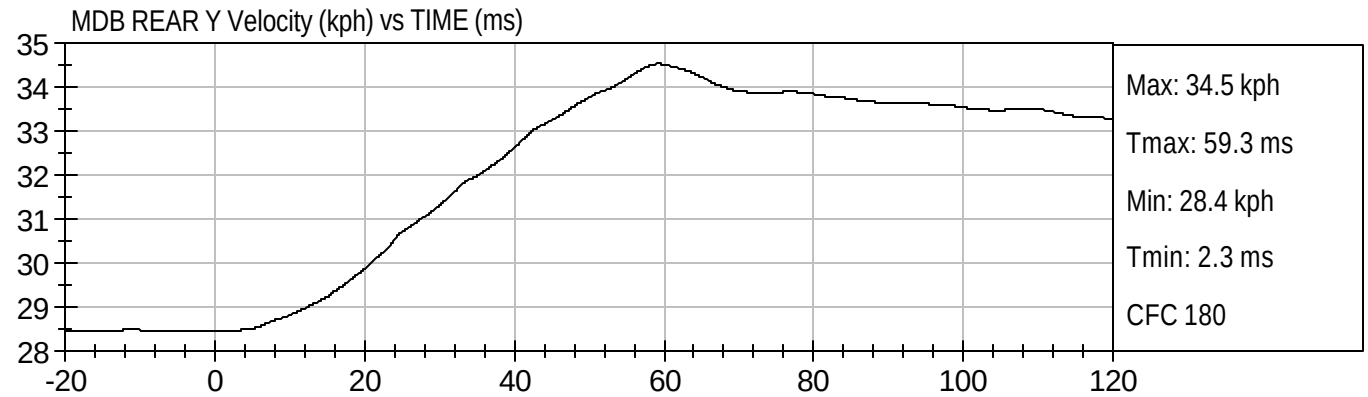
90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)



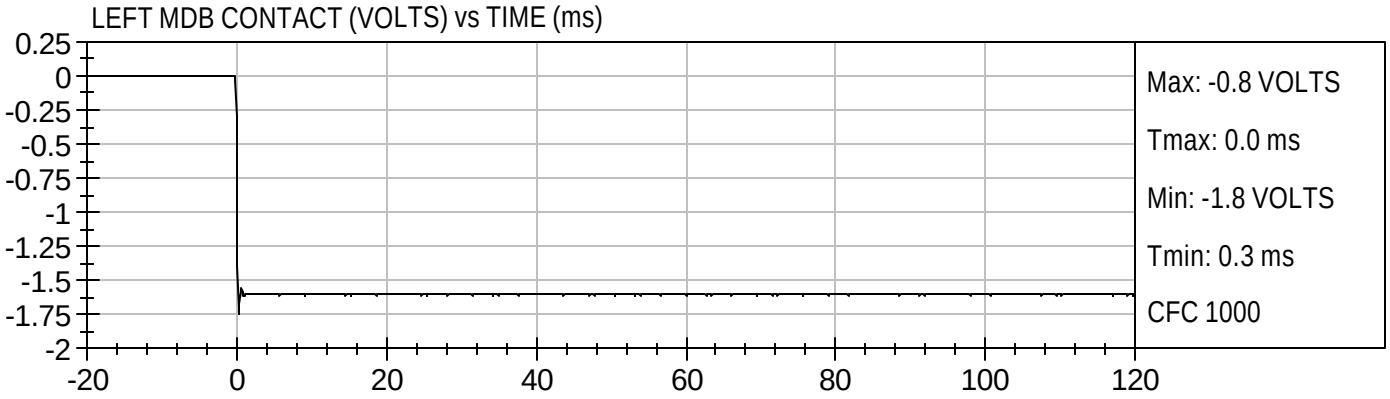


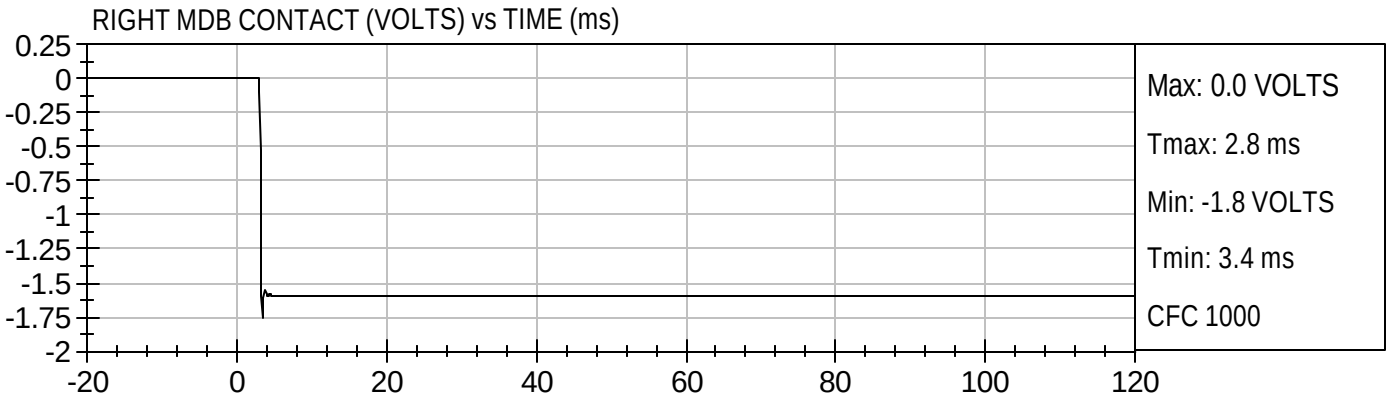




90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)

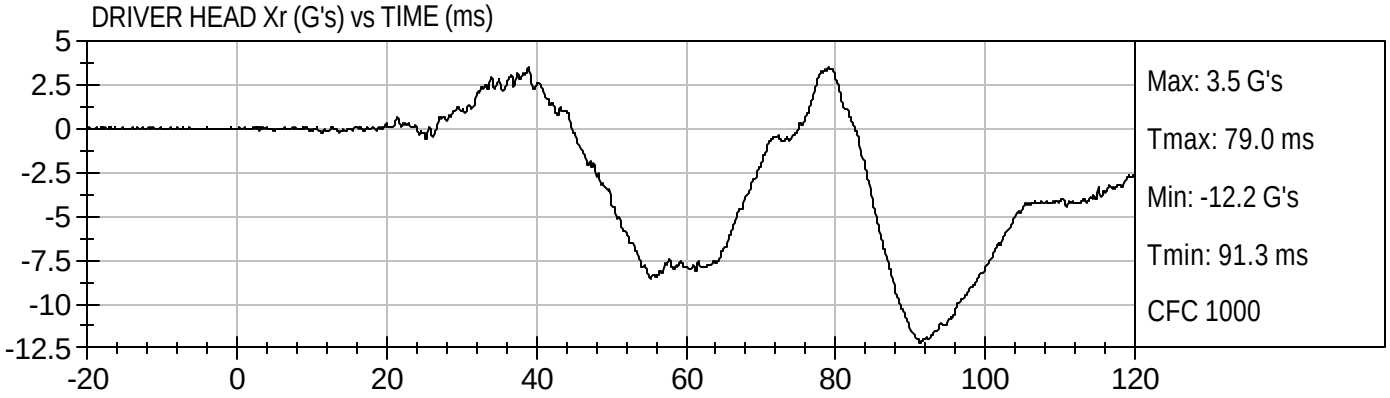




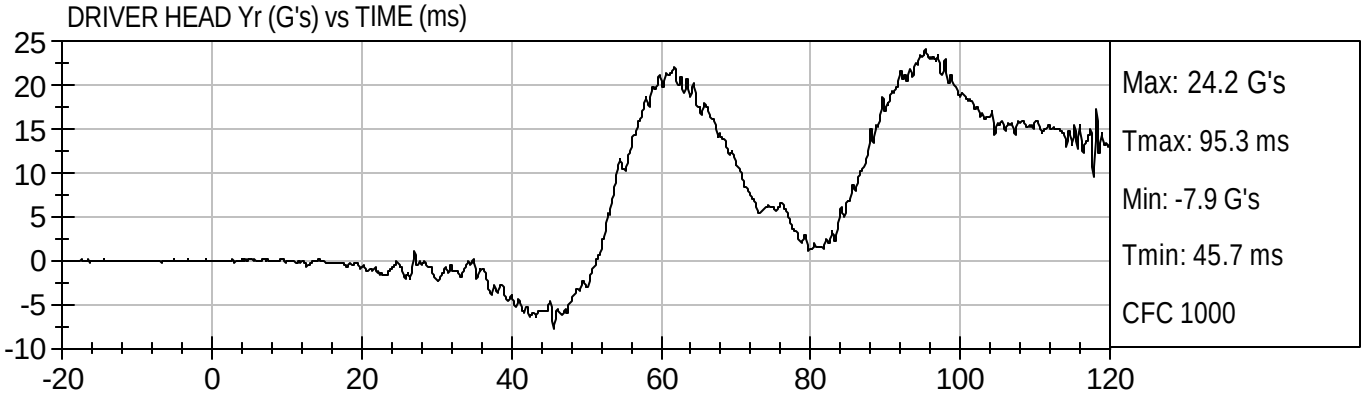
90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)

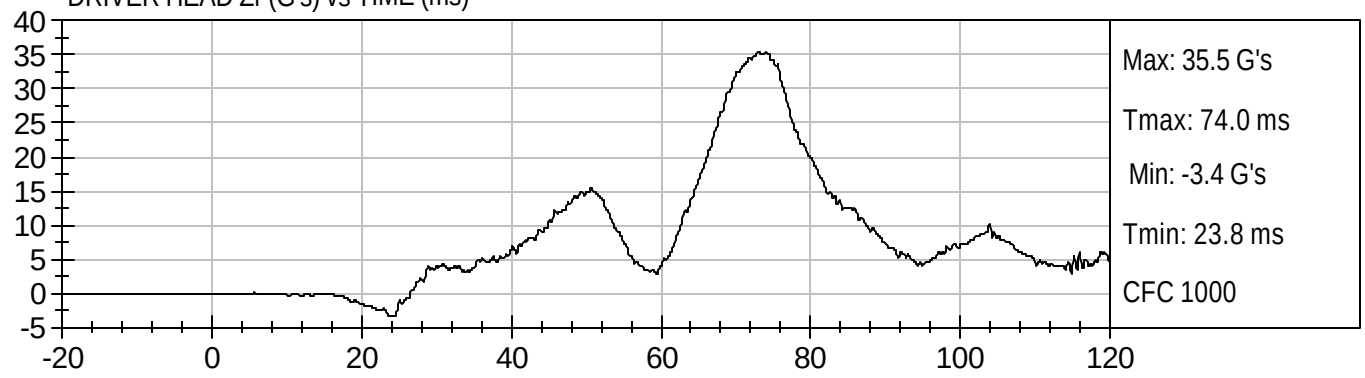
DRIVER HEAD Xr (G's) vs TIME (ms)



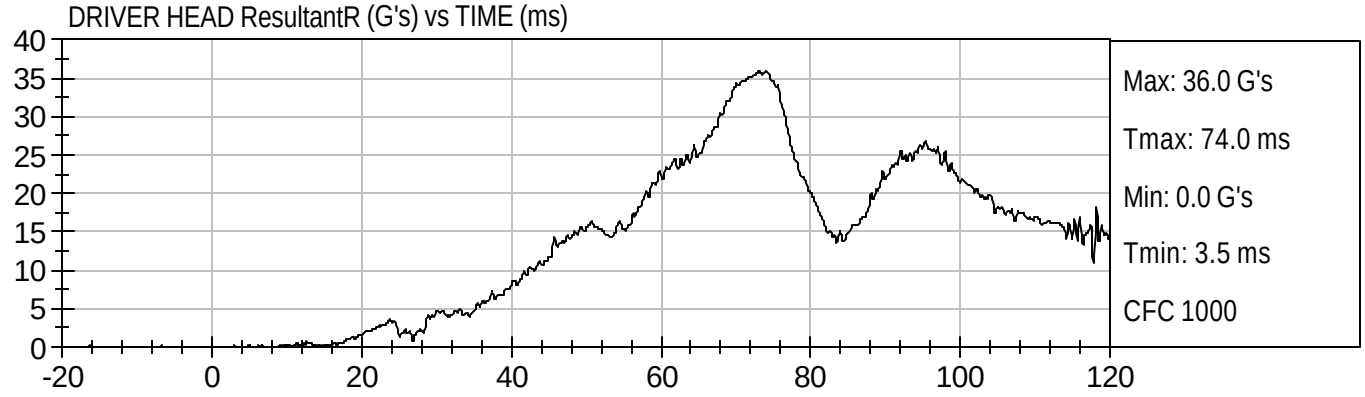
DRIVER HEAD Yr (G's) vs TIME (ms)



DRIVER HEAD Zr (G's) vs TIME (ms)

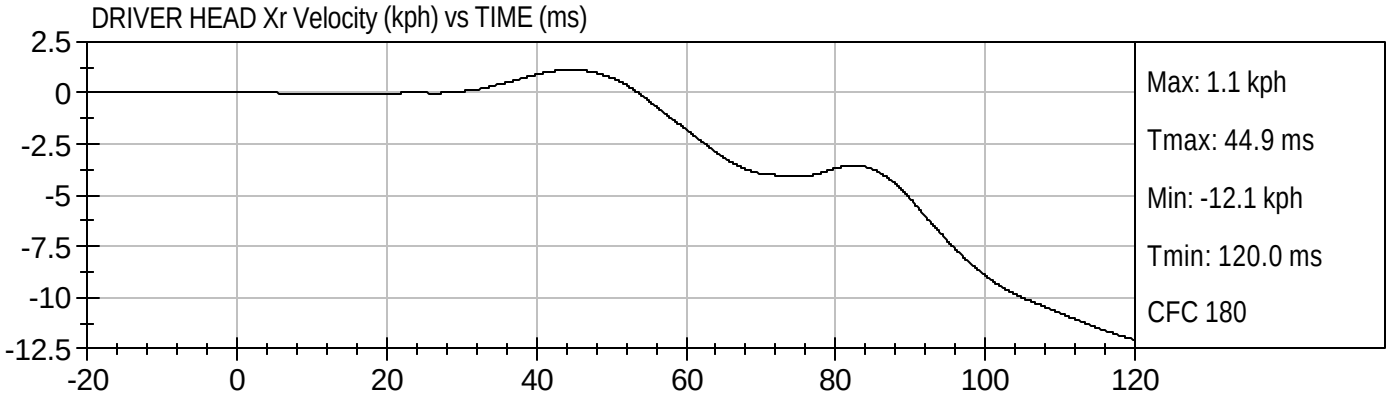


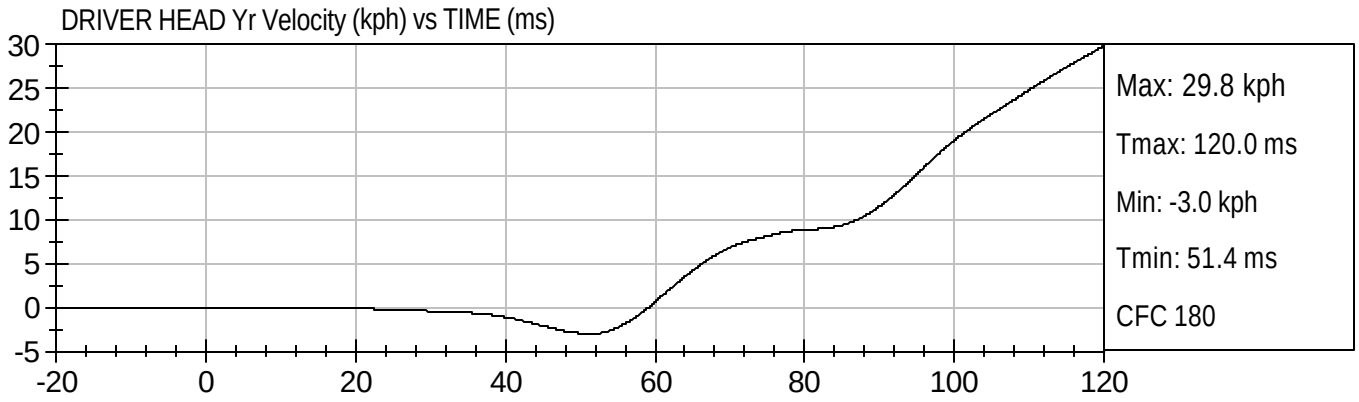
DRIVER HEAD ResultantR (G's) vs TIME (ms)

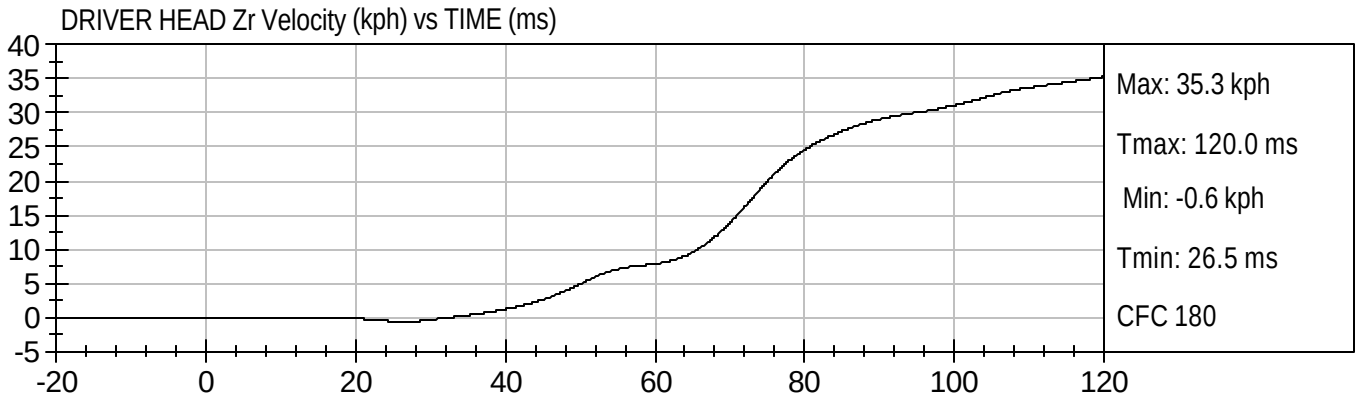


90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)



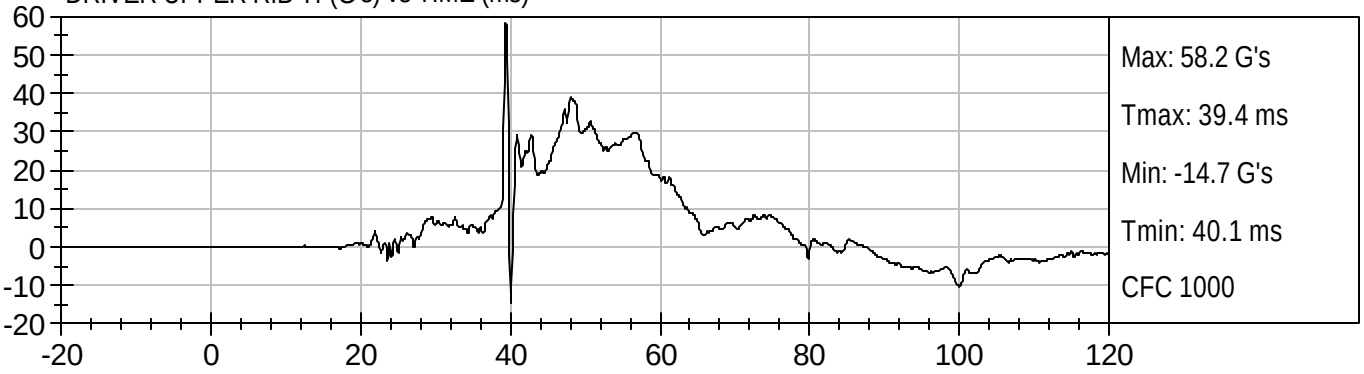




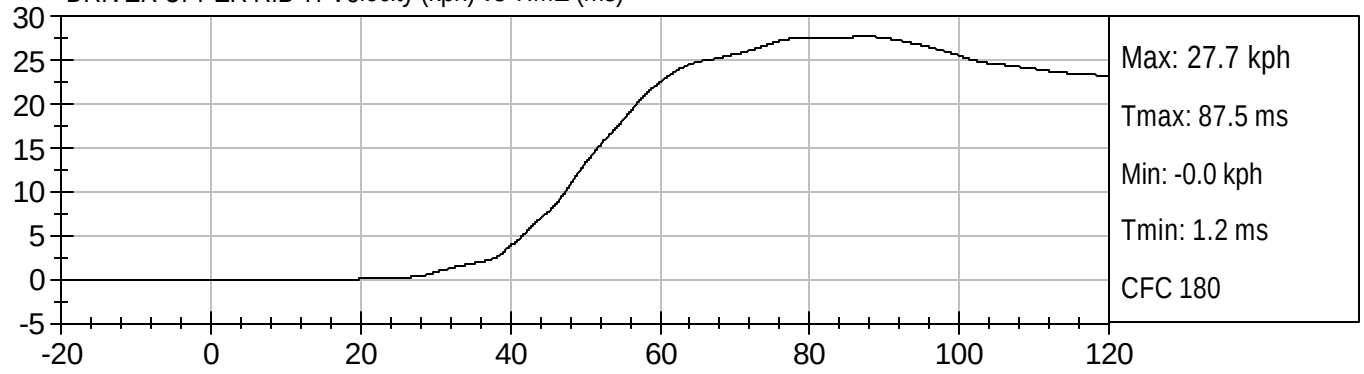
90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)

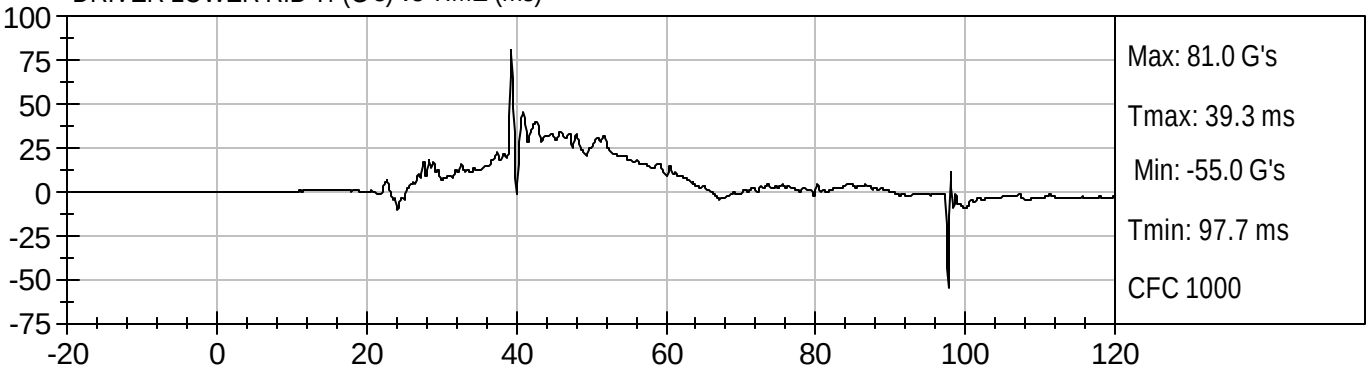
DRIVER UPPER RIB Yr (G's) vs TIME (ms)



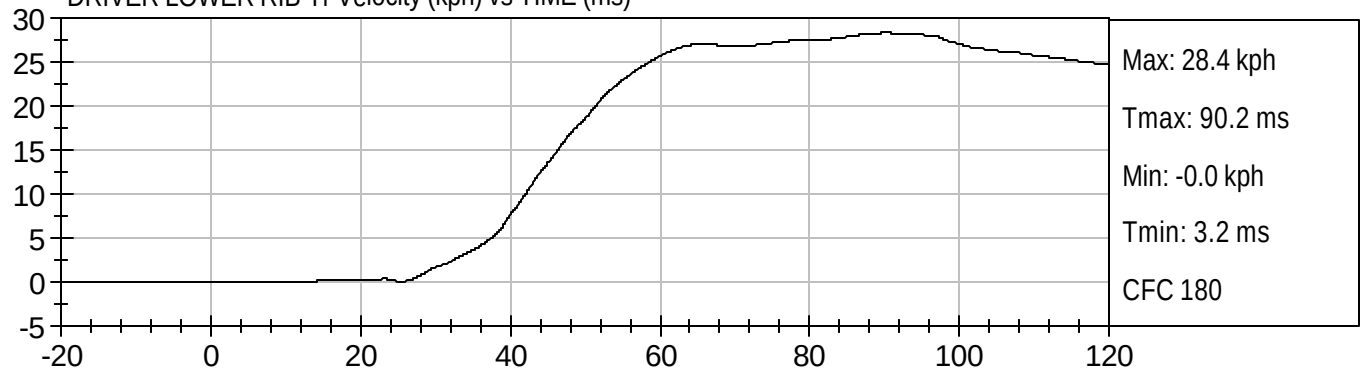
DRIVER UPPER RIB Yr Velocity (kph) vs TIME (ms)



DRIVER LOWER RIB Yr (G's) vs TIME (ms)



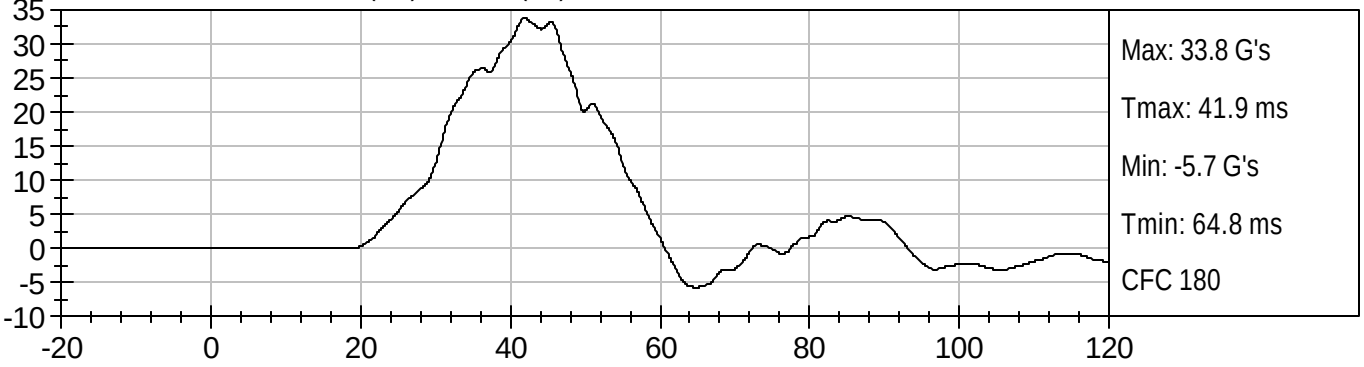
DRIVER LOWER RIB Yr Velocity (kph) vs TIME (ms)



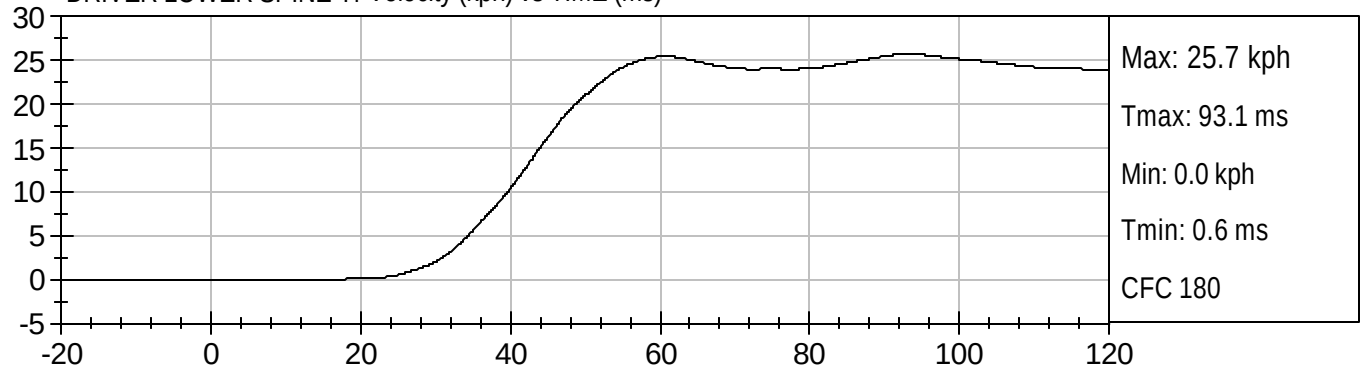
90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)

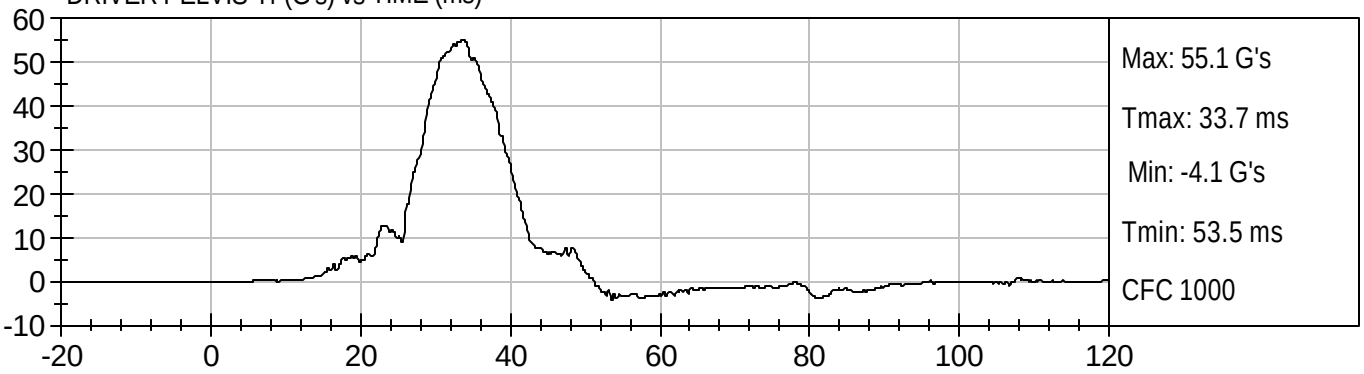
DRIVER LOWER SPINE Yr (G's) vs TIME (ms)



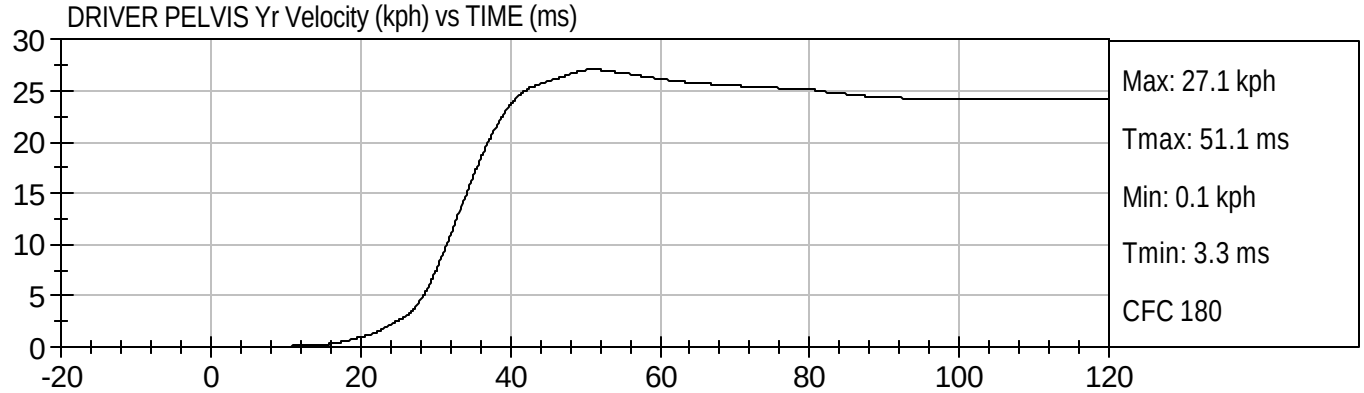
DRIVER LOWER SPINE Yr Velocity (kph) vs TIME (ms)



DRIVER PELVIS Yr (G's) vs TIME (ms)

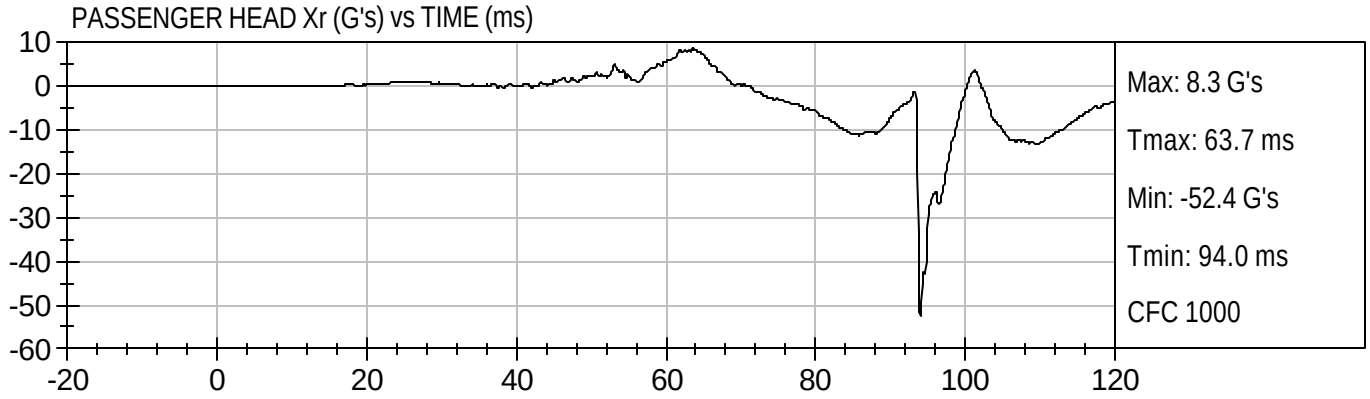


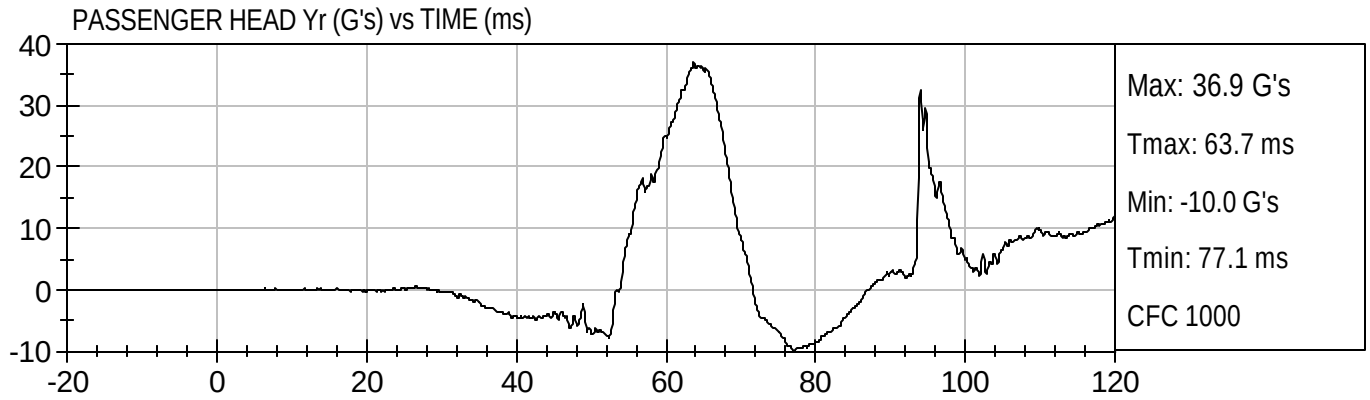
DRIVER PELVIS Yr Velocity (kph) vs TIME (ms)

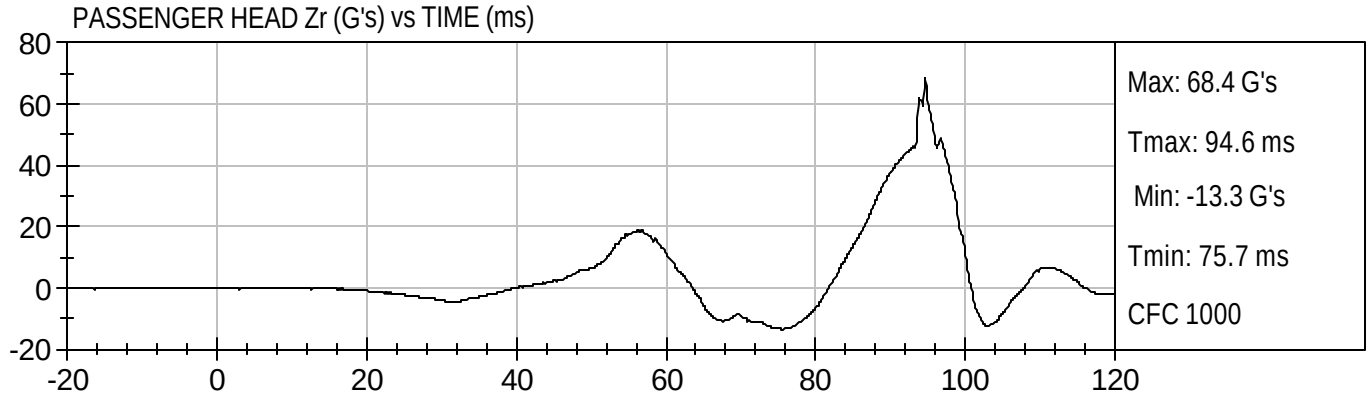


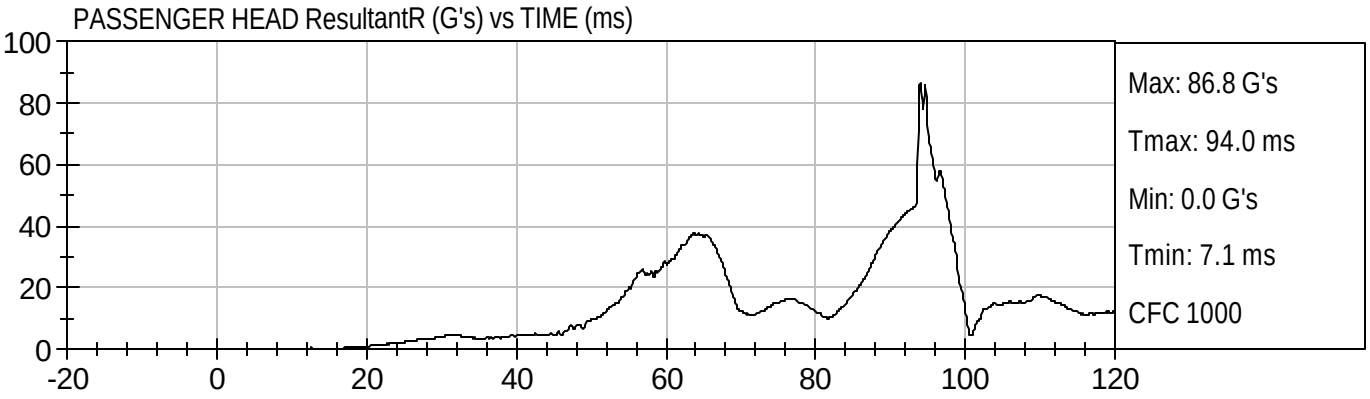
90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)



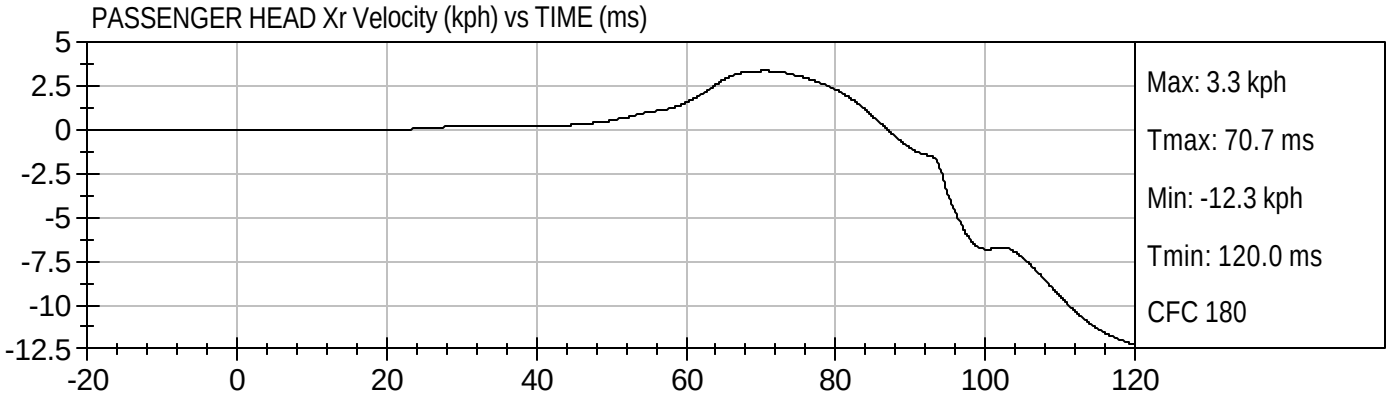


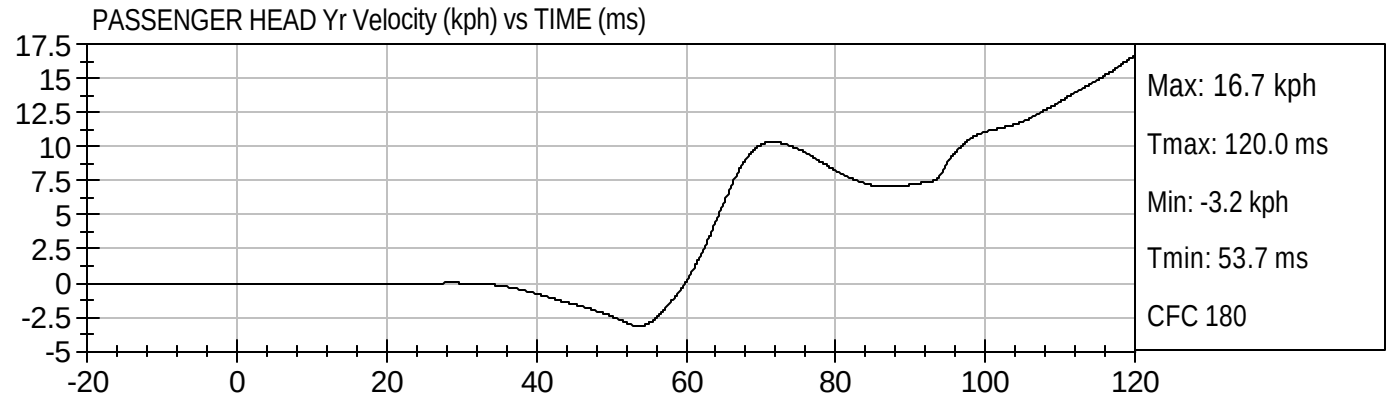


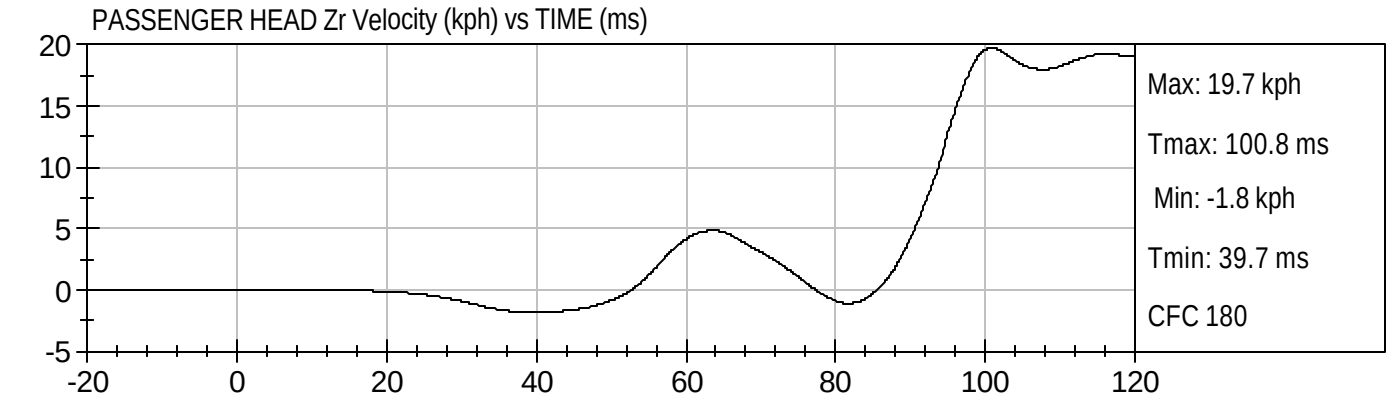


90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)



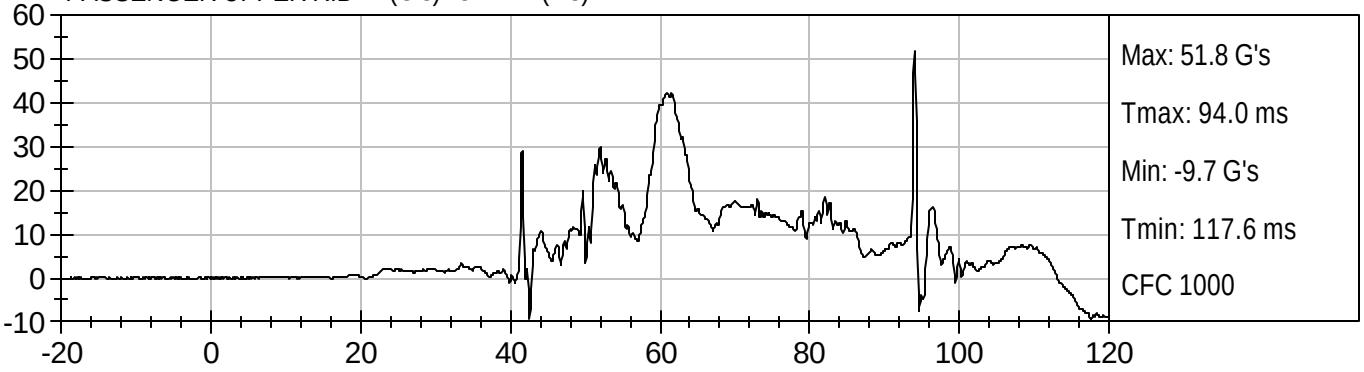




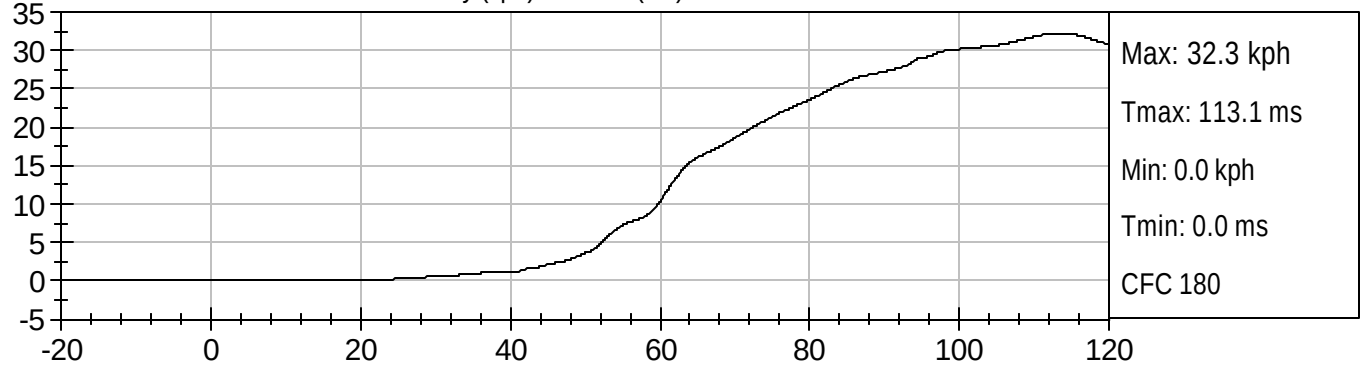
90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)

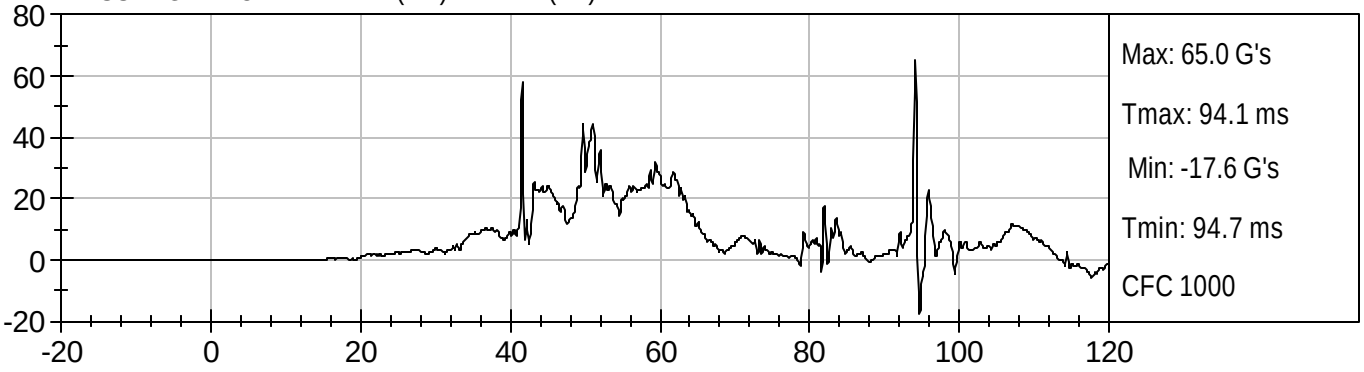
PASSENGER UPPER RIB Yr (G's) vs TIME (ms)



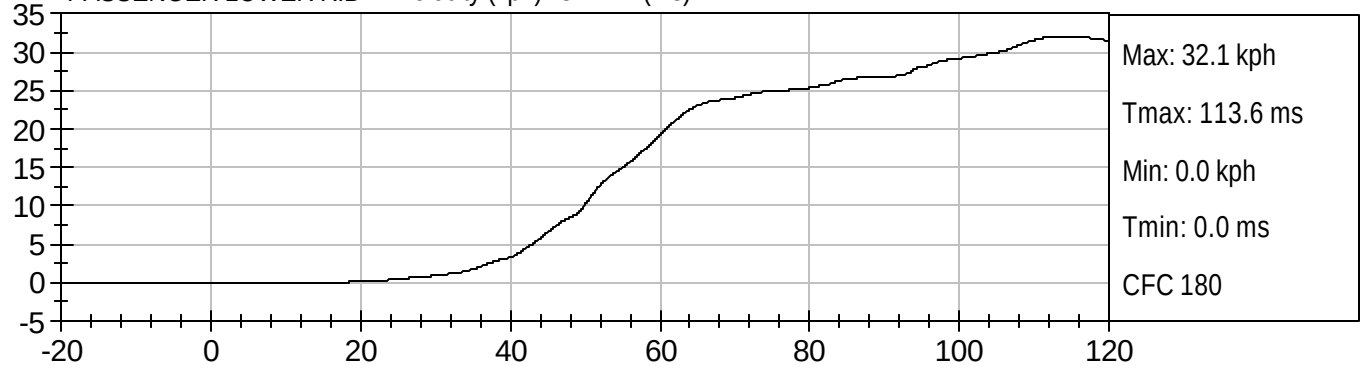
PASSENGER UPPER RIB Yr Velocity (kph) vs TIME (ms)



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



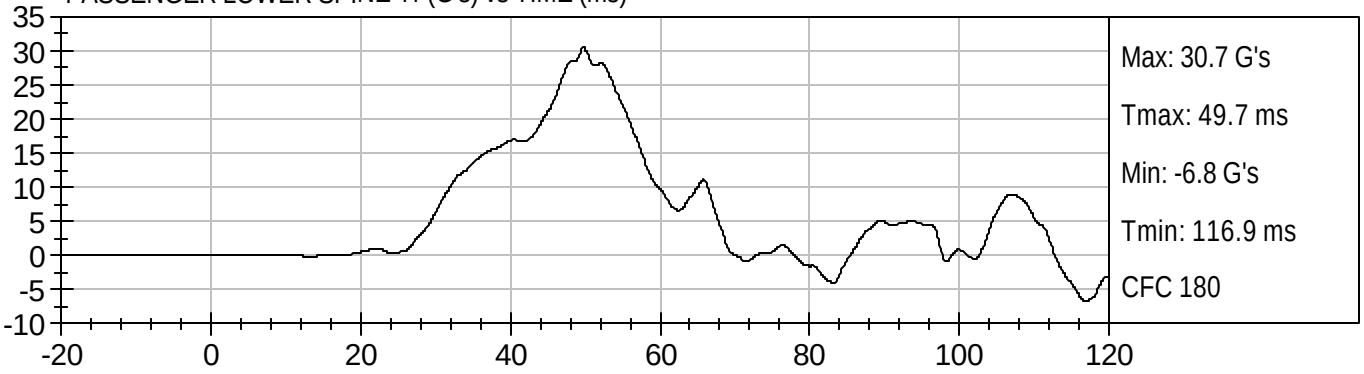
PASSENGER LOWER RIB Yr Velocity (kph) vs TIME (ms)



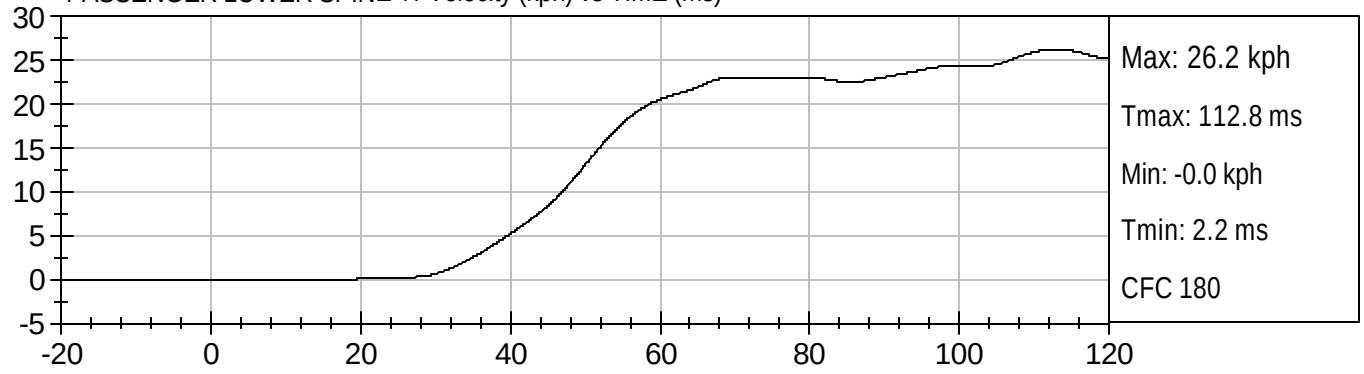
90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)

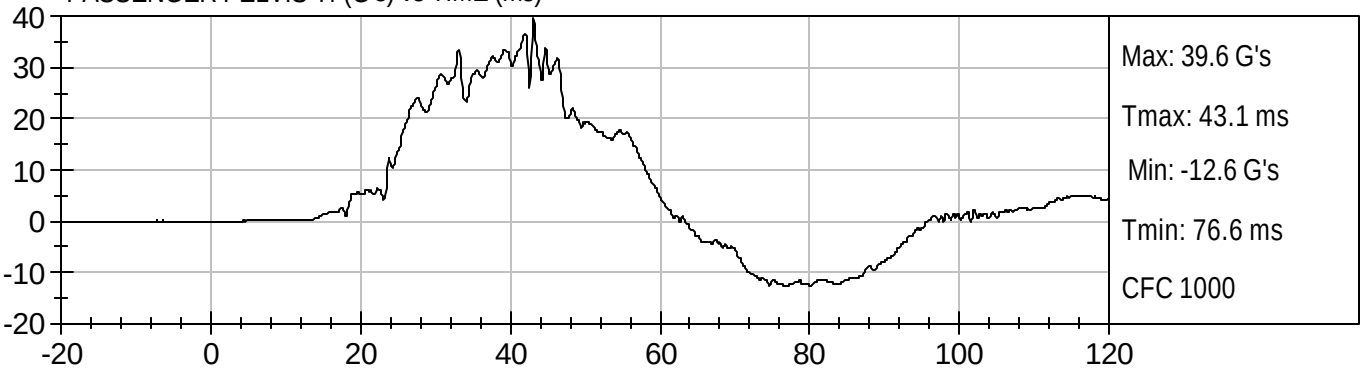
PASSENGER LOWER SPINE Yr (G's) vs TIME (ms)



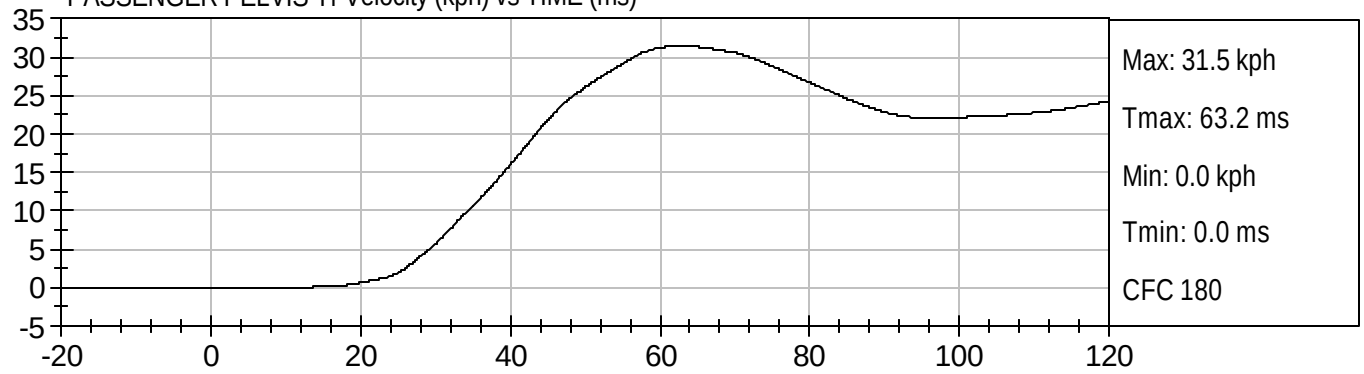
PASSENGER LOWER SPINE Yr Velocity (kph) vs TIME (ms)



PASSENGER PELVIS Yr (G's) vs TIME (ms)

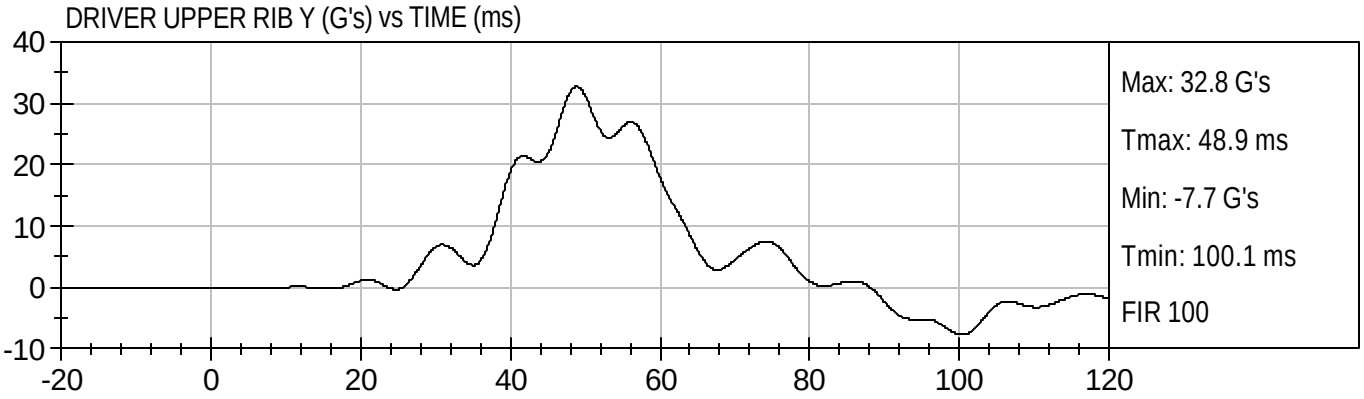


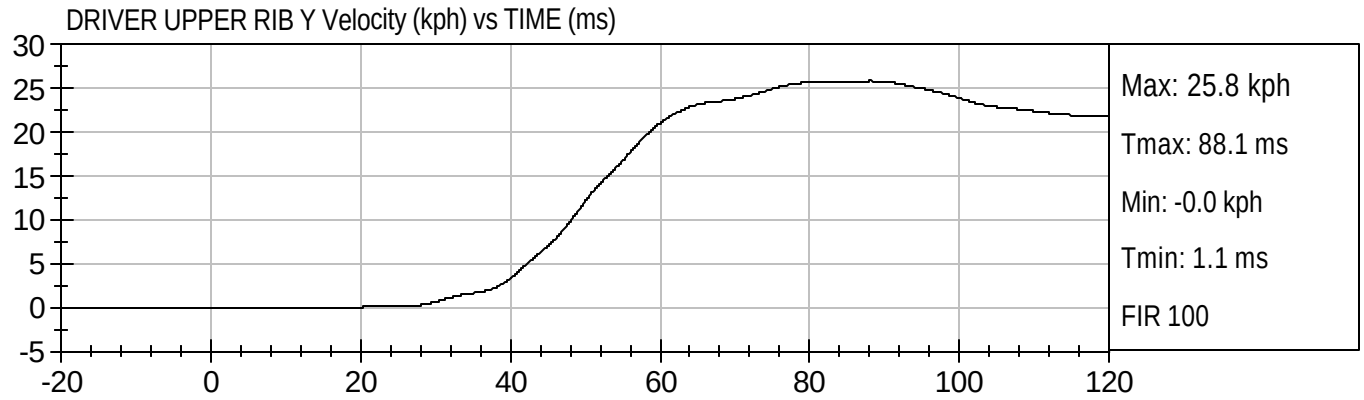
PASSENGER PELVIS Yr Velocity (kph) vs TIME (ms)

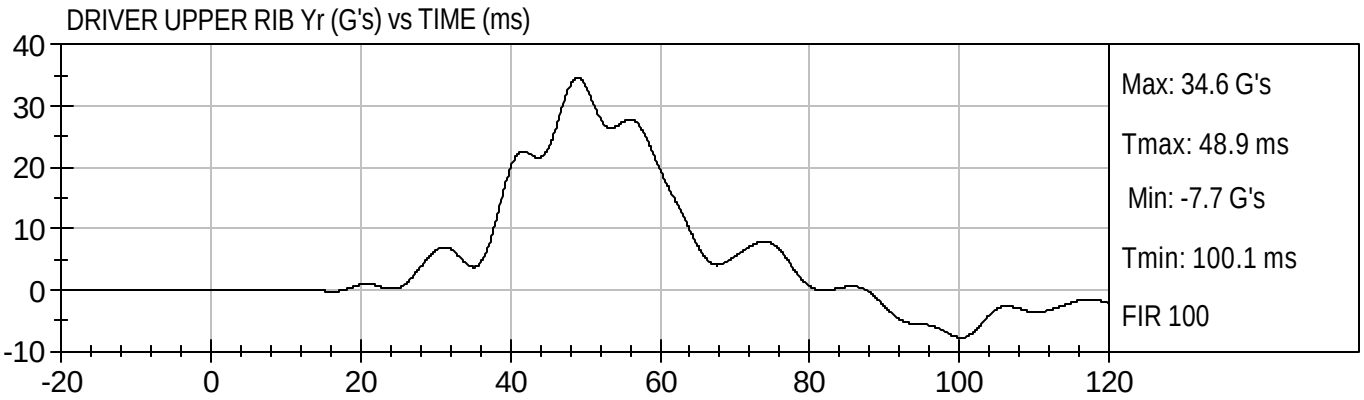


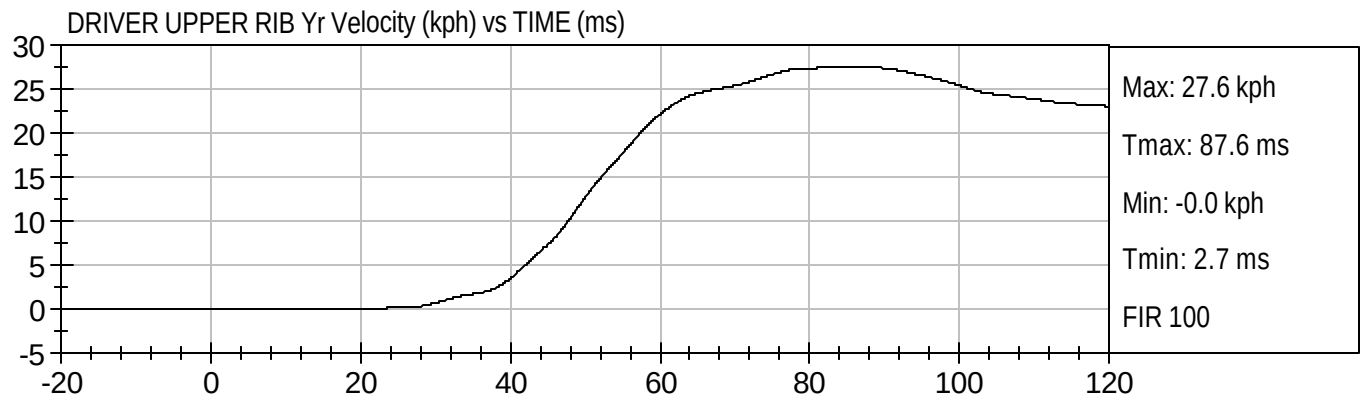
90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)



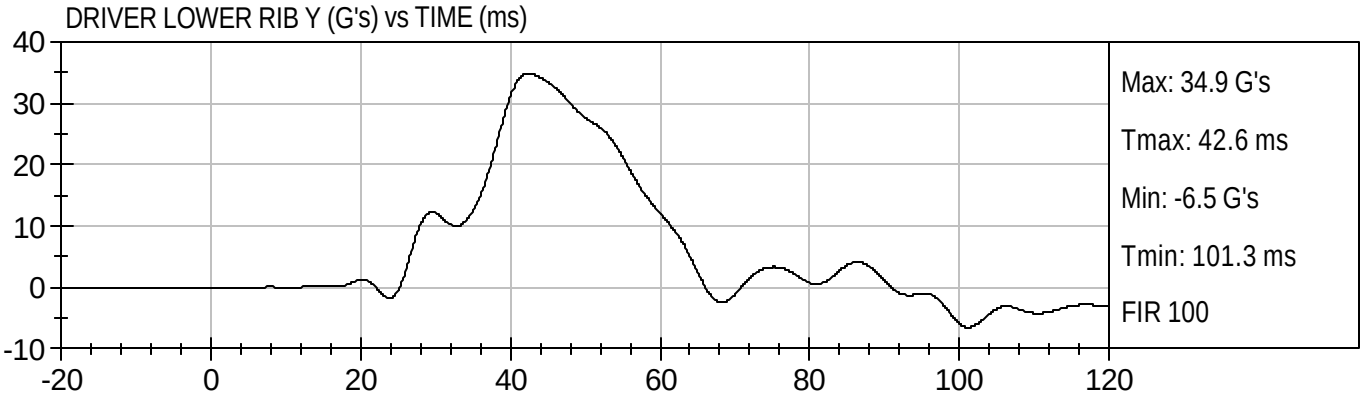


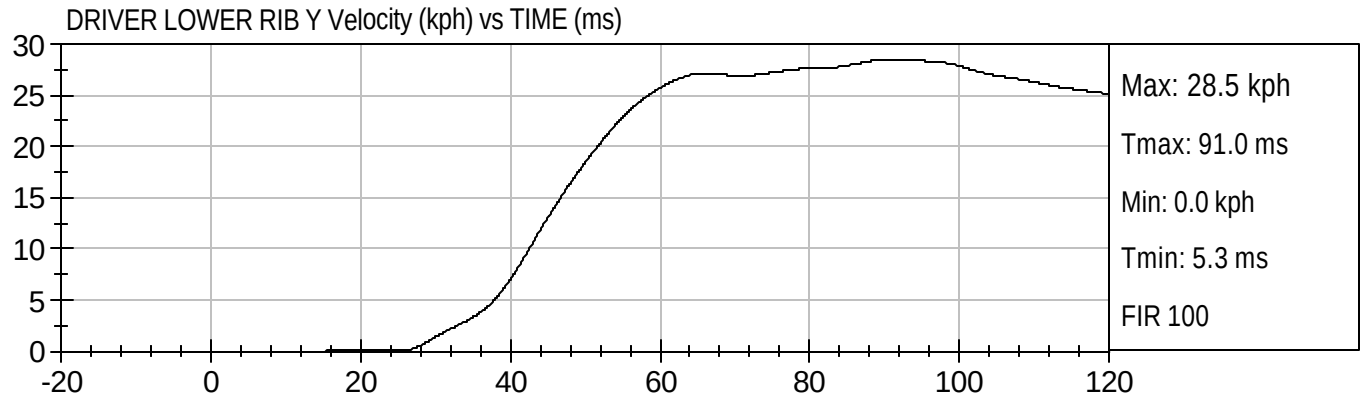


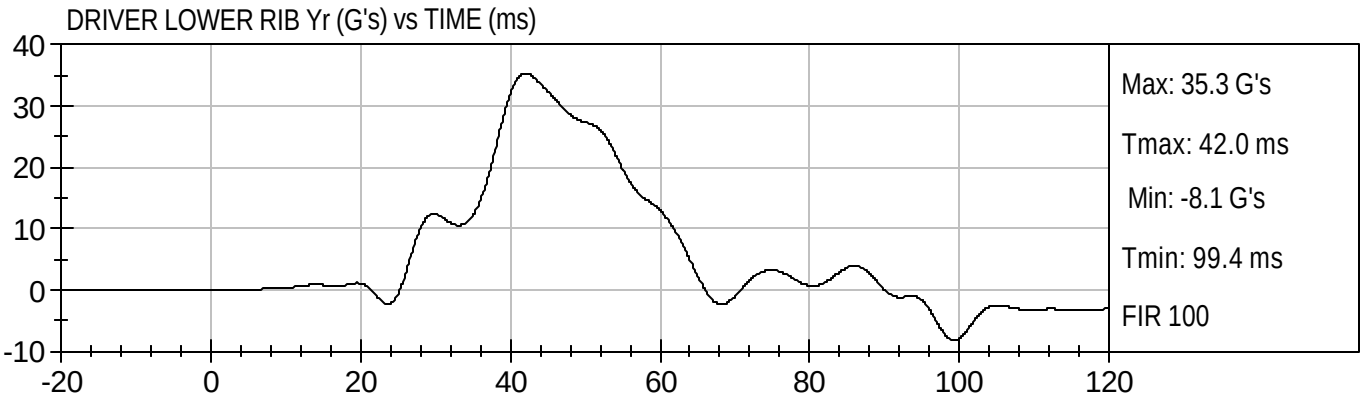


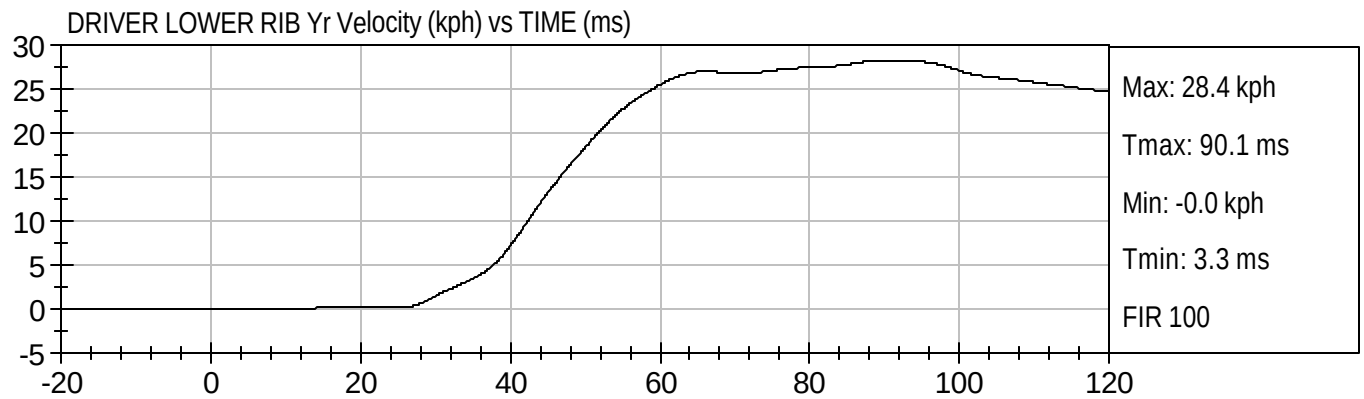
90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)





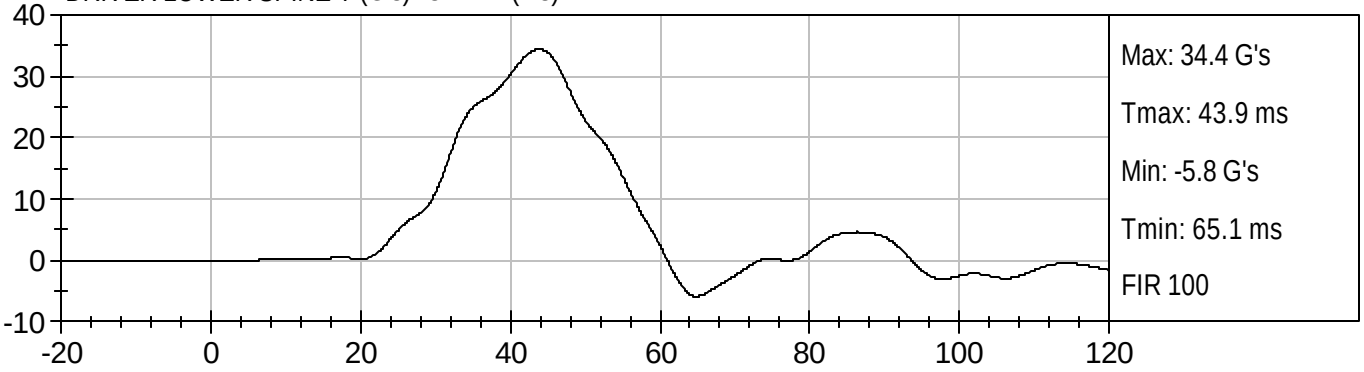




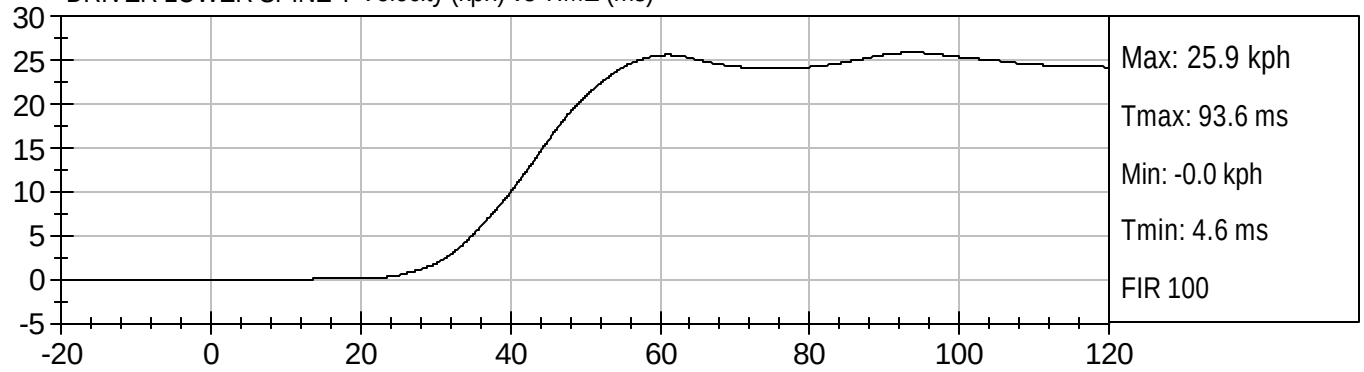
90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)

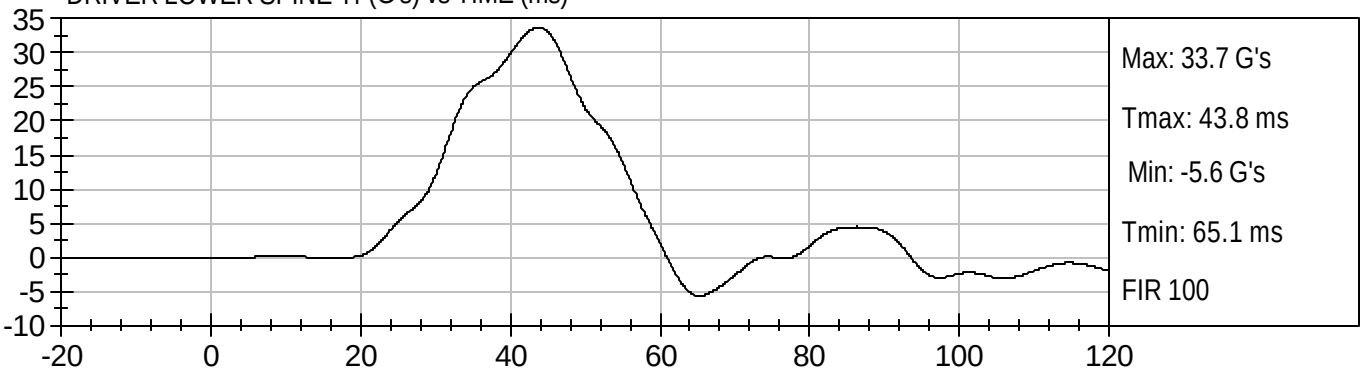
DRIVER LOWER SPINE Y (G's) vs TIME (ms)



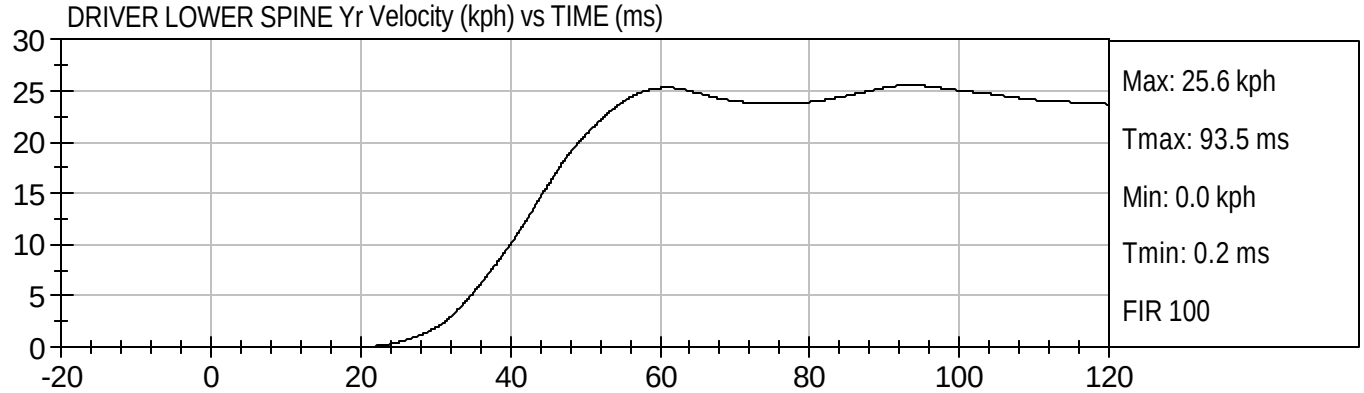
DRIVER LOWER SPINE Y Velocity (kph) vs TIME (ms)



DRIVER LOWER SPINE Yr (G's) vs TIME (ms)

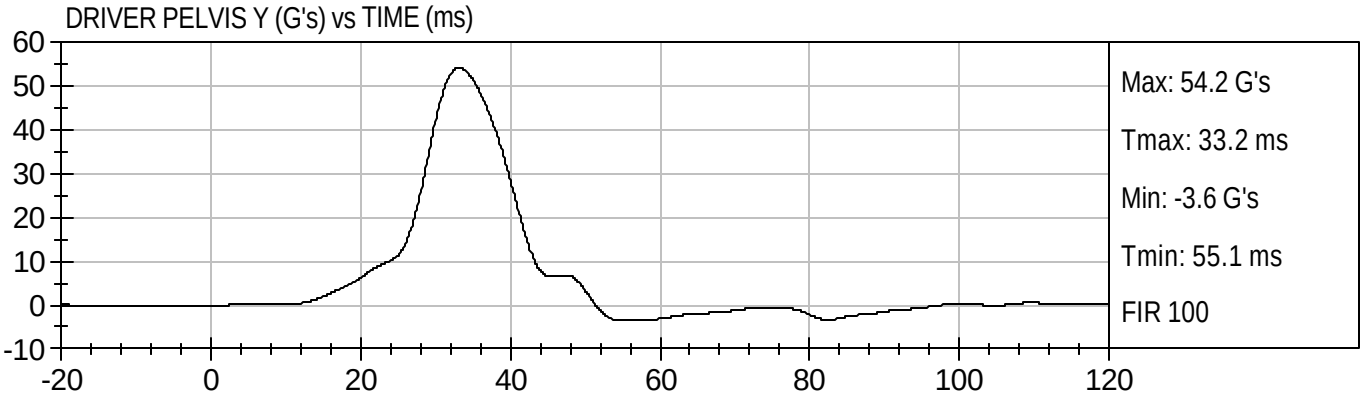


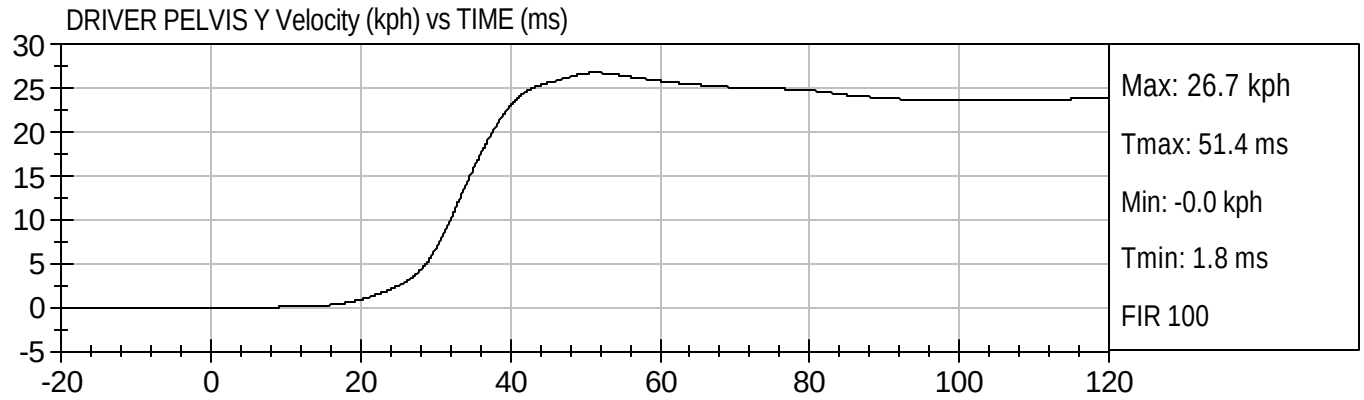
DRIVER LOWER SPINE Yr Velocity (kph) vs TIME (ms)

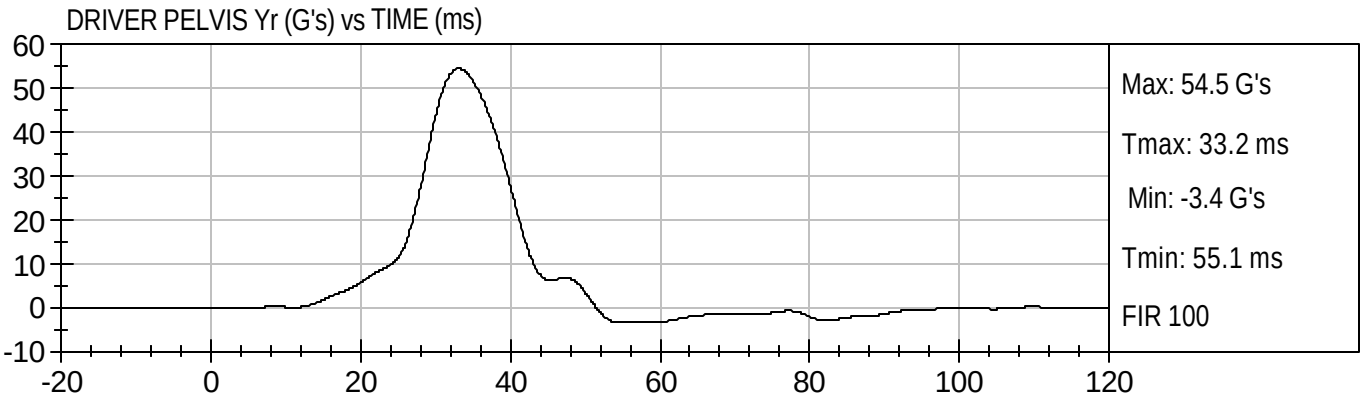


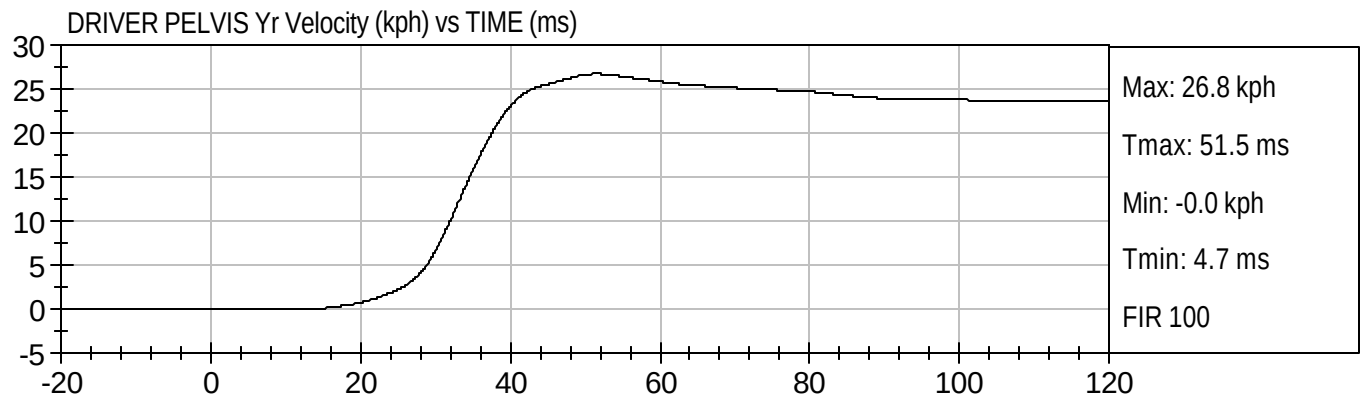
90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)

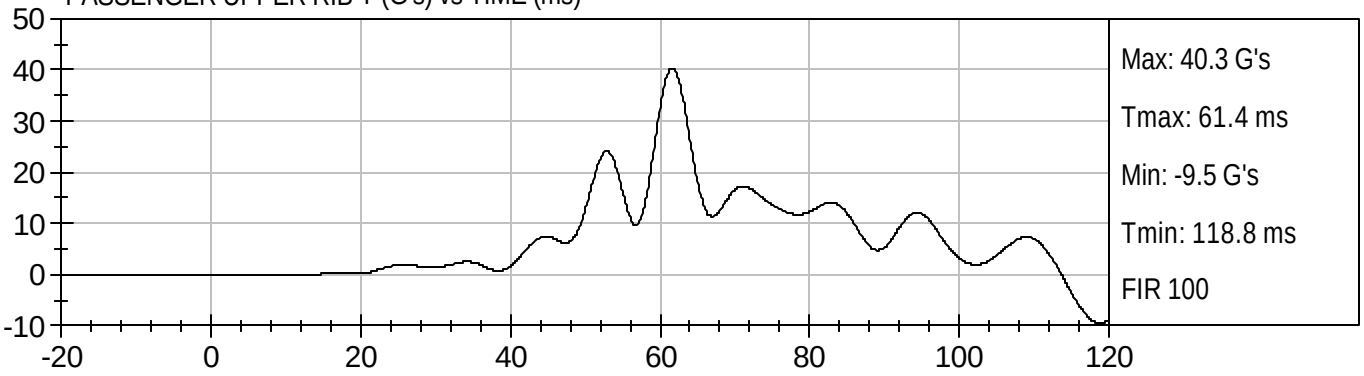




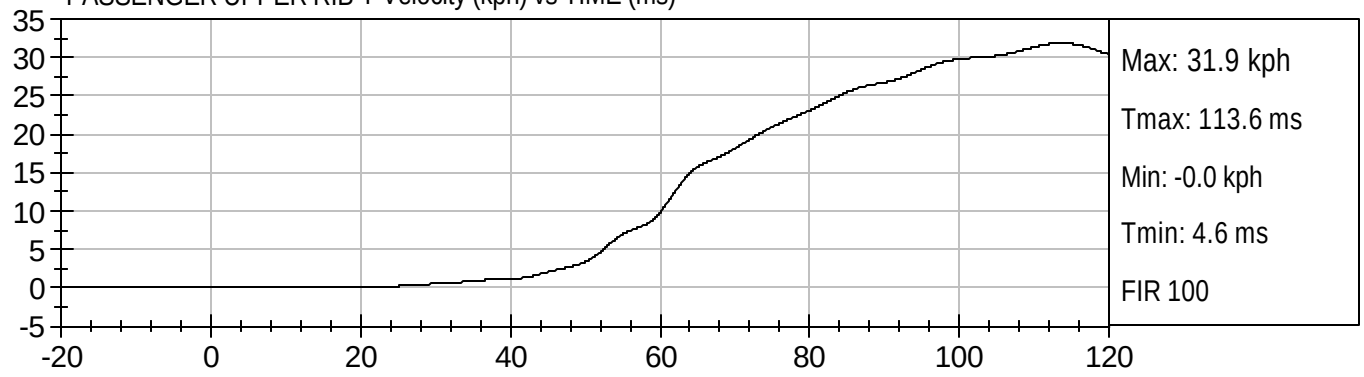




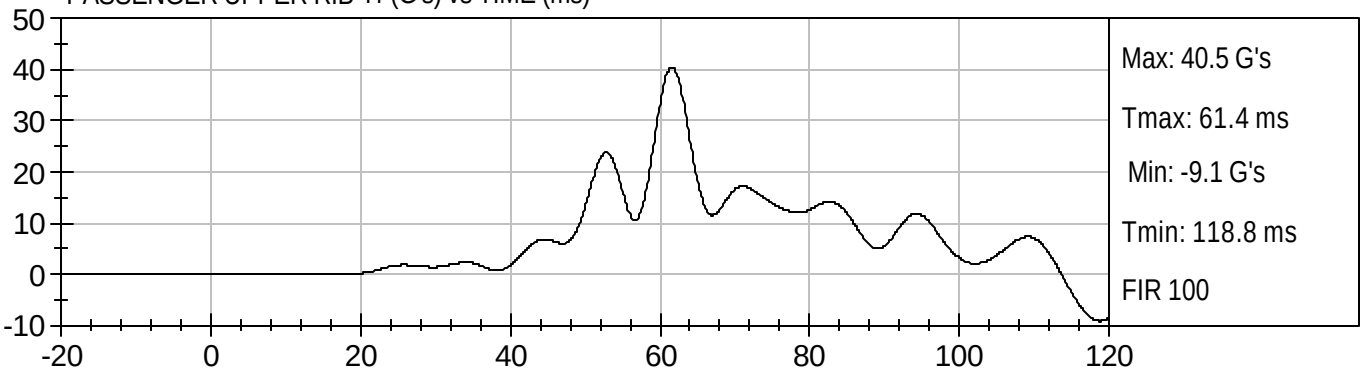
PASSENGER UPPER RIB Y (G's) vs TIME (ms)



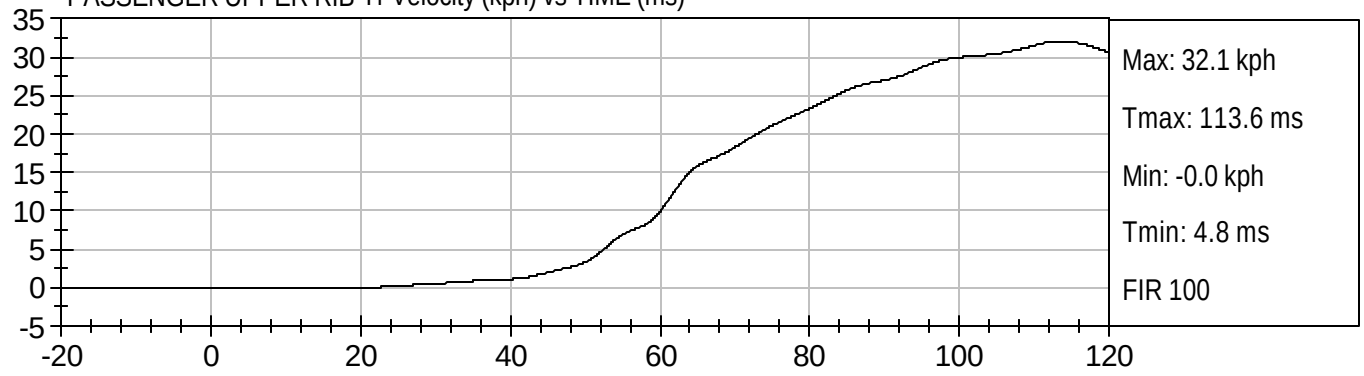
PASSENGER UPPER RIB Y Velocity (kph) vs TIME (ms)



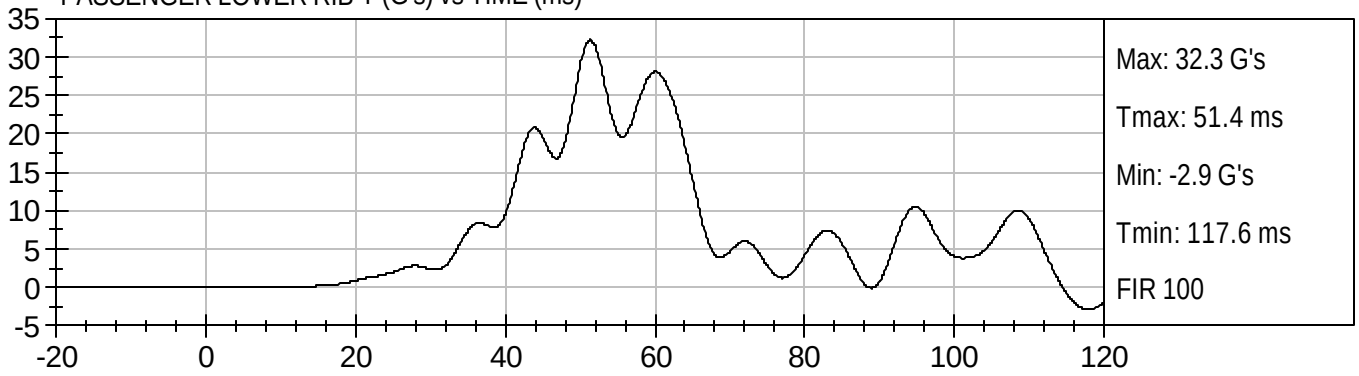
PASSENGER UPPER RIB Yr (G's) vs TIME (ms)



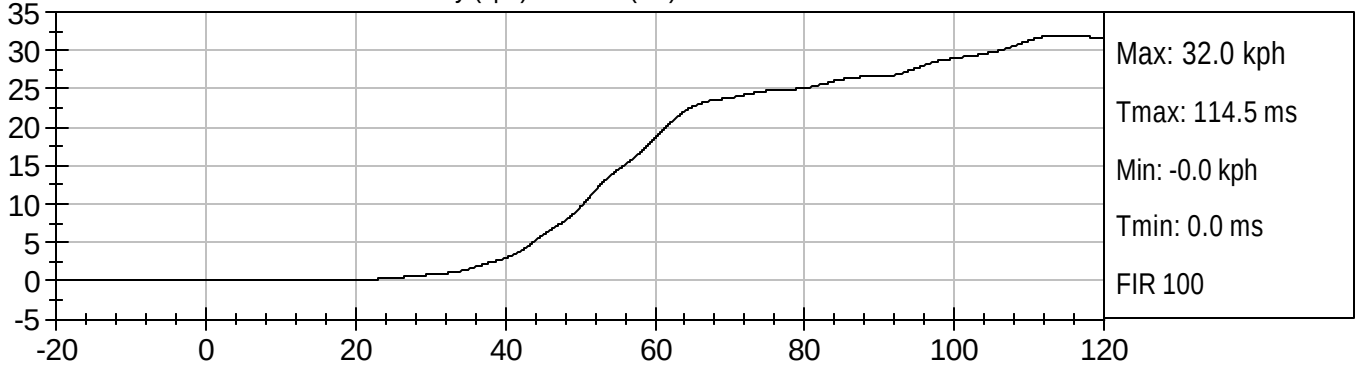
PASSENGER UPPER RIB Yr Velocity (kph) vs TIME (ms)



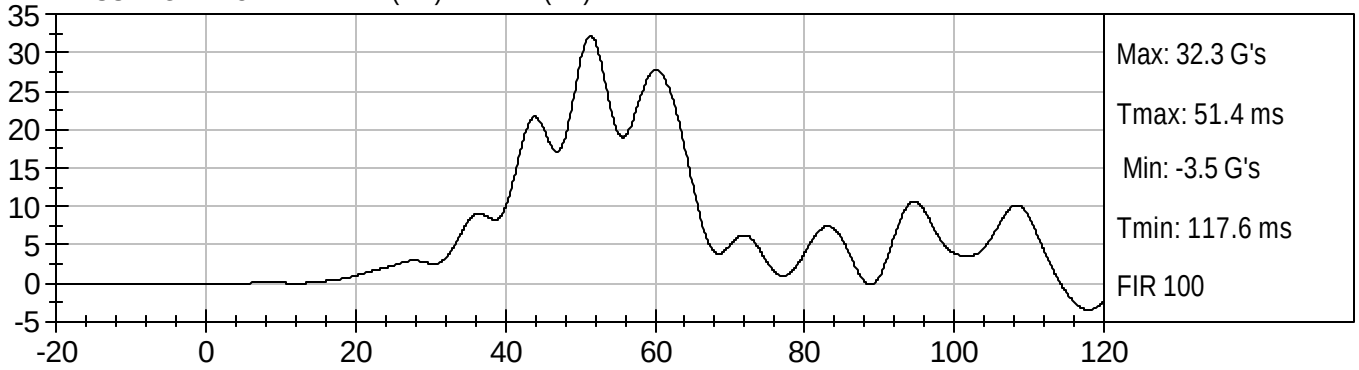
PASSENGER LOWER RIB Y (G's) vs TIME (ms)



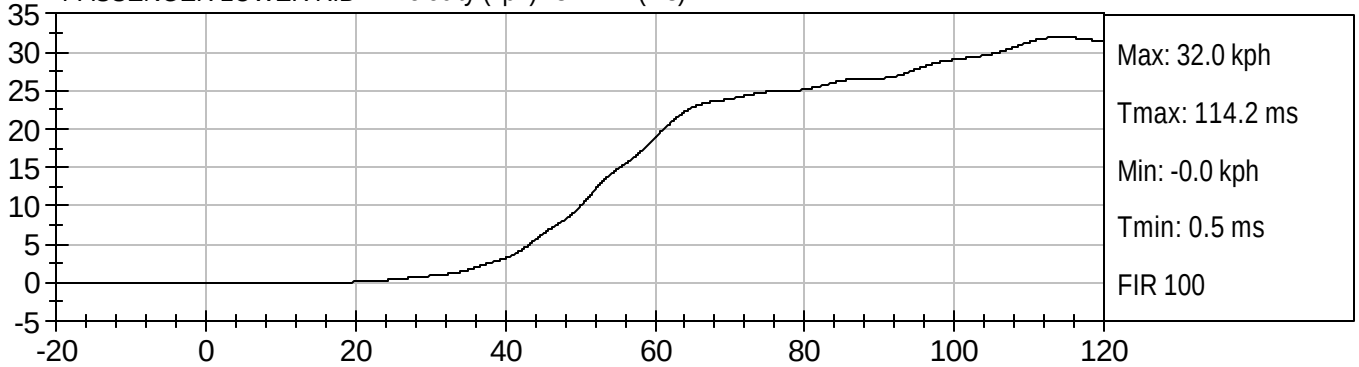
PASSENGER LOWER RIB Y Velocity (kph) vs TIME (ms)



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



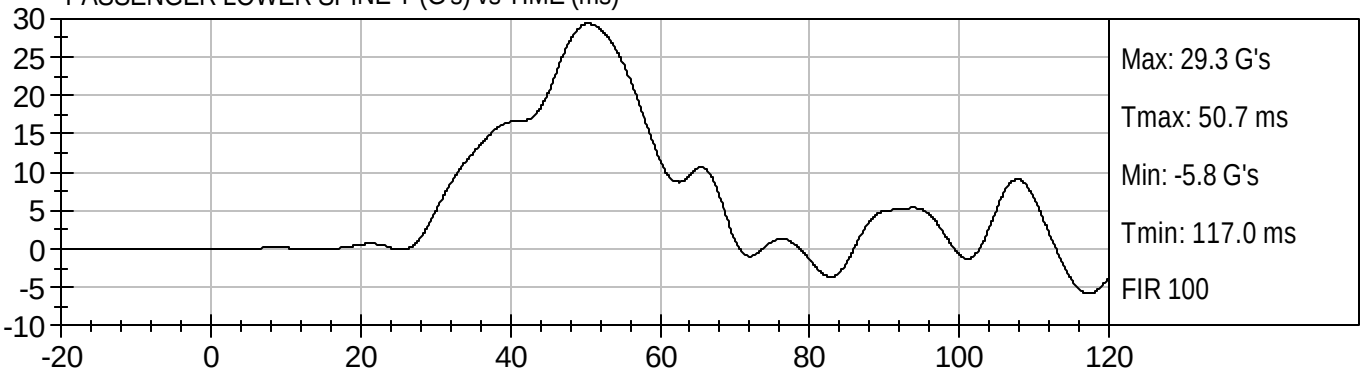
PASSENGER LOWER RIB Yr Velocity (kph) vs TIME (ms)



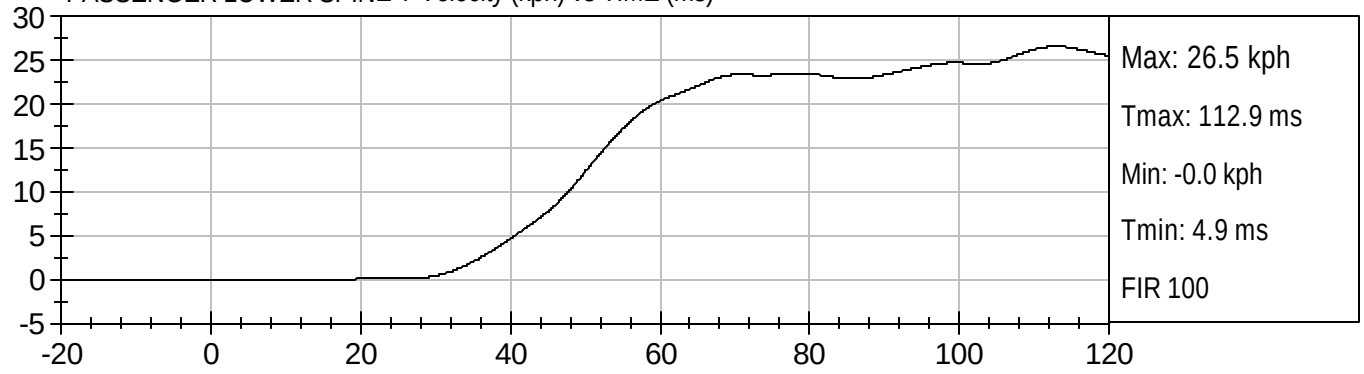
90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)

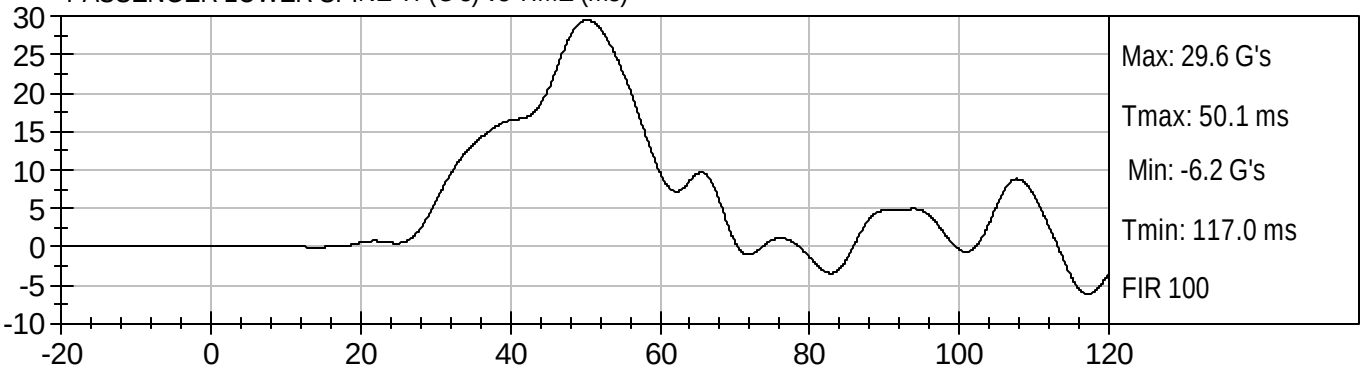
PASSENGER LOWER SPINE Y (G's) vs TIME (ms)



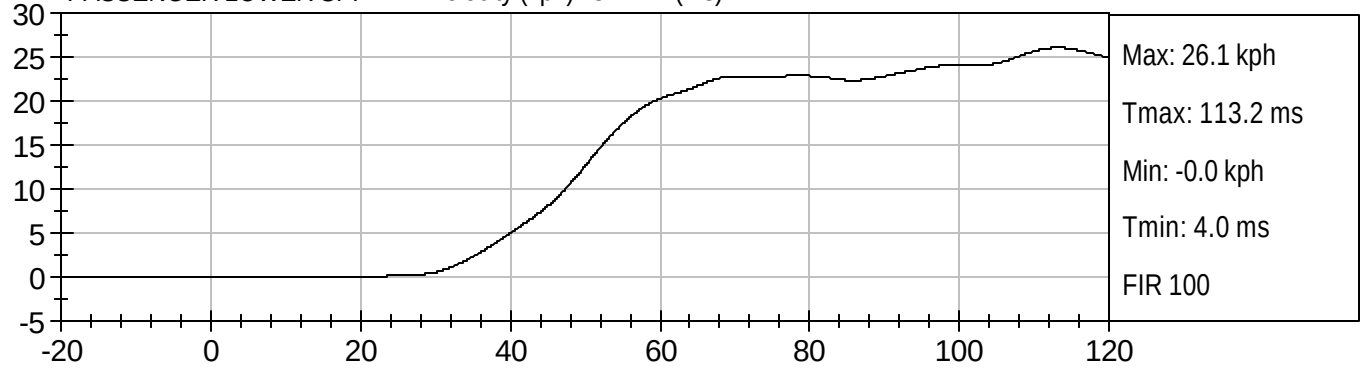
PASSENGER LOWER SPINE Y Velocity (kph) vs TIME (ms)



PASSENGER LOWER SPINE Yr (G's) vs TIME (ms)



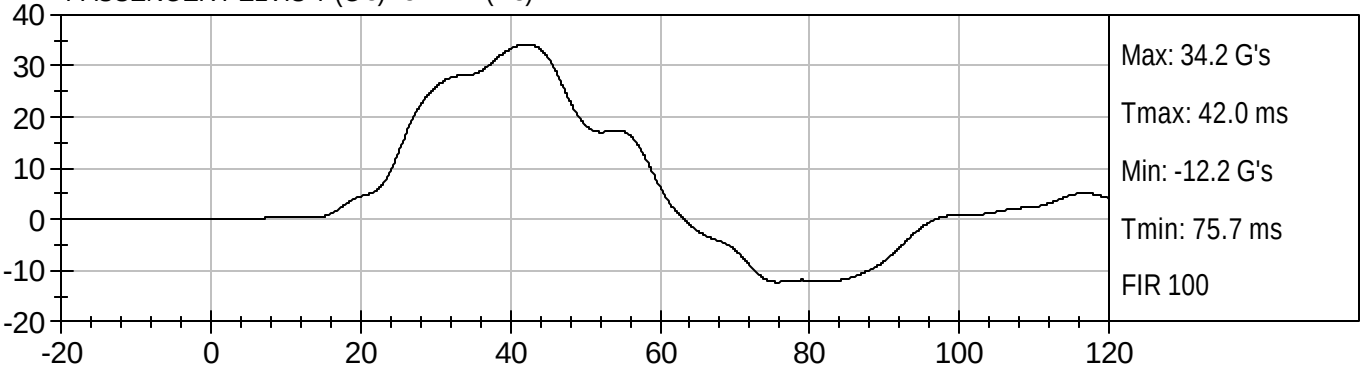
PASSENGER LOWER SPINE Yr Velocity (kph) vs TIME (ms)



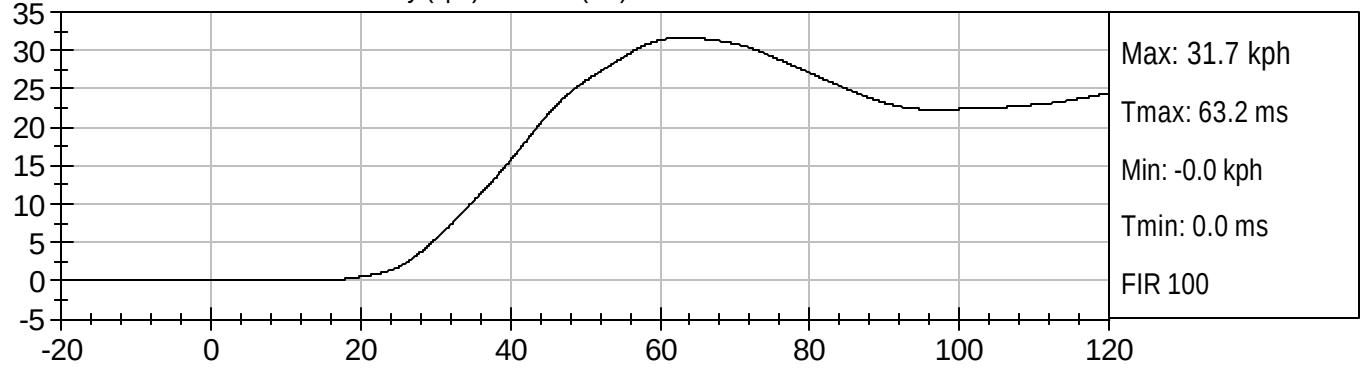
90 DEGREE INDICANT SIDE IMPACT
2002 FORD EXPLORER (C20206)

Test Date: 2/7/02
Speed: 39.0 mph (62.7 km/h)

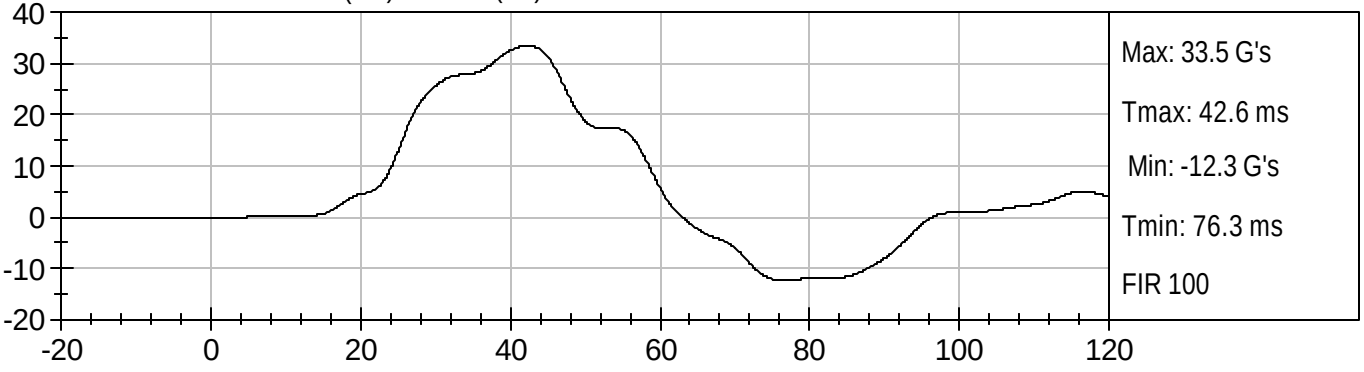
PASSENGER PELVIS Y (G's) vs TIME (ms)



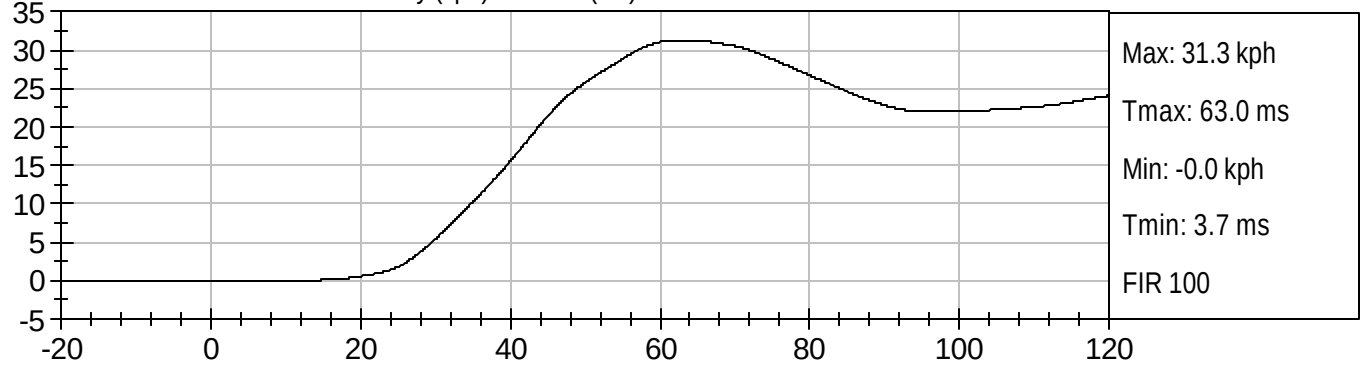
PASSENGER PELVIS Y Velocity (kph) vs TIME (ms)



PASSENGER PELVIS Yr (G's) vs TIME (ms)



PASSENGER PELVIS Yr Velocity (kph) vs TIME (ms)



APPENDIX C

SID CONFIGURATION AND PERFORMANCE VERIFICATION DATA

SID Calibration Data Sheet

Side Impact Dummy

Configured to Left Side Impact

Technician:Tim Michnay

Tested Parameter	Units	Specification	Dummy Serial Number:037		Dummy Serial Number:036	
			Pre-Test	Post-Test	Pre-Test	Post-Test
SH – Seated Height	mm	889 - 909	902	902	903	903
RH – Rib Height	mm	501 – 521	509	509	506	506
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	519	519	518	518
SW – Knee Pivot to Floor	mm	490 – 505	493	493	497	497
HW – Hip Width	mm	356 – 391	378	378	370	370
Thorax Impact						
Laboratory Temperature	°C	18.9 to 25.5	20.7	22.3	20.7	22.3
Laboratory Relative Humidity	%	10 to 70	21	21	23	21
Probe Velocity	m/s	4.27 – 4.33	4.28	4.28	4.30	4.27
Upper Rib	G's	37 – 46	44	41	44	45
Lower Rib	G's	37 – 46	44	43	46	44
Lower Spine	G's	15 – 22	20	19	19	18
Pelvis Impact						
Laboratory Temperature	°C	18.9 to 25.5	20.6	22.3	20.7	22.5
Laboratory Relative Humidity	%	10 to 70	21	21	23	27
Probe Velocity	m/s	4.27 – 4.33	4.30	4.27	4.27	4.27
Pelvis	G's	40 - 60	48	48	46	41

CERTIFICATION DATA

Dummy Serial Number: 037

Calibration Test Results Summary

Dummy Serial Number: 037

Pre-Test Calibration

External Dimensions:	The dummy passed all external dimension requirements.
Head Drop Test:	The head passed all drop test requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis passed all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion Test:	The lumbar passed all flexion test requirements.

SID Calibration Data Sheet

Side Impact Dummy

External Measurements

ATD Serial No.: 037 Test Number:D0209

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

1/18/02

Laboratory Technician Test Date

Approved By

SID Calibration Data Sheet

Side Impact Dummy

Head Drop Calibration

ATD Serial No.:037 Test I.D.:D02091

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	20.7	Pass
Laboratory Relative Humidity	%	10 to 70	20	Pass
Peak Resultant Acceleration	G's	210 to 260	225	Pass
Peak Lateral Acceleration	G's	< 10	-4	Pass
Time Above 100 G	msec	0.9 – 1.5	1.1	Pass
		Overall Test Results		Pass

1/18/02

Laboratory Technician Test Date

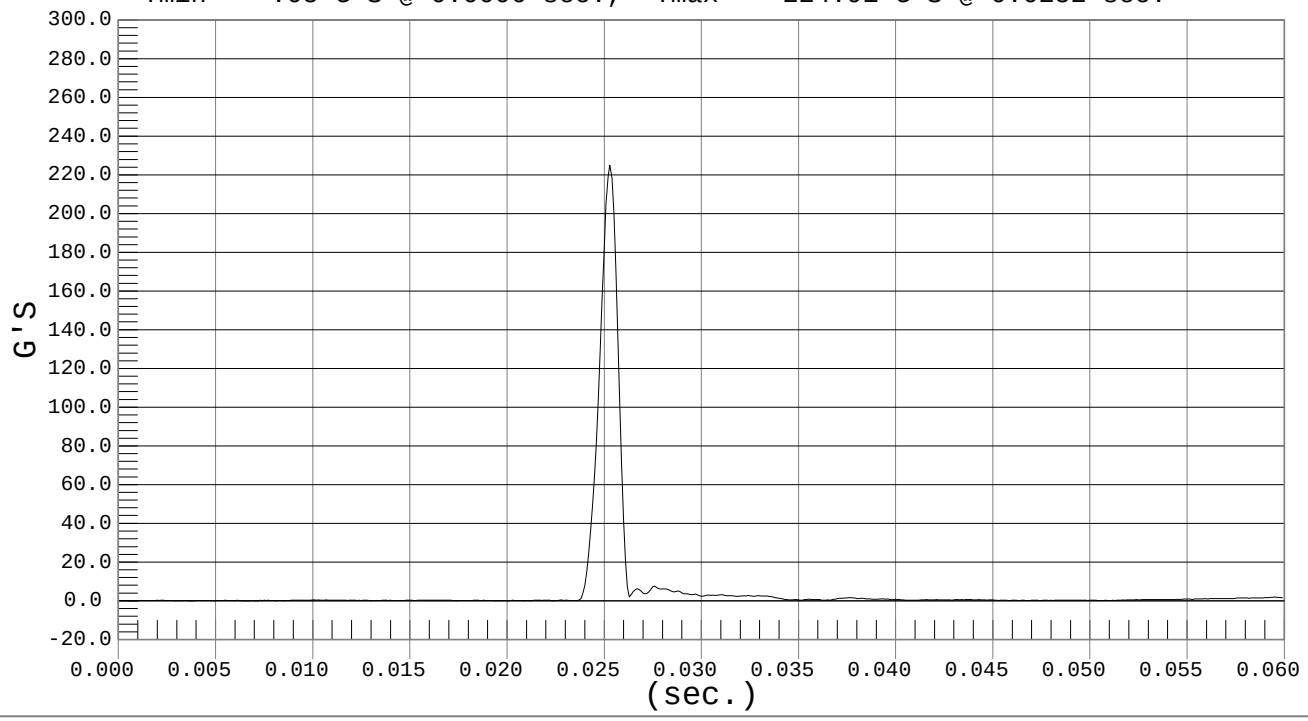
Approved By

PEAK RESULTANT ACCELERATION

Test Desc.: Head Drop
Component: Dummy #037

Test Date: 01-18-02
Speed: 0.0 fps, 0.00 M/s

Ymin = .05 G'S @ 0.0006 sec., Ymax = 224.91 G'S @ 0.0252 sec.

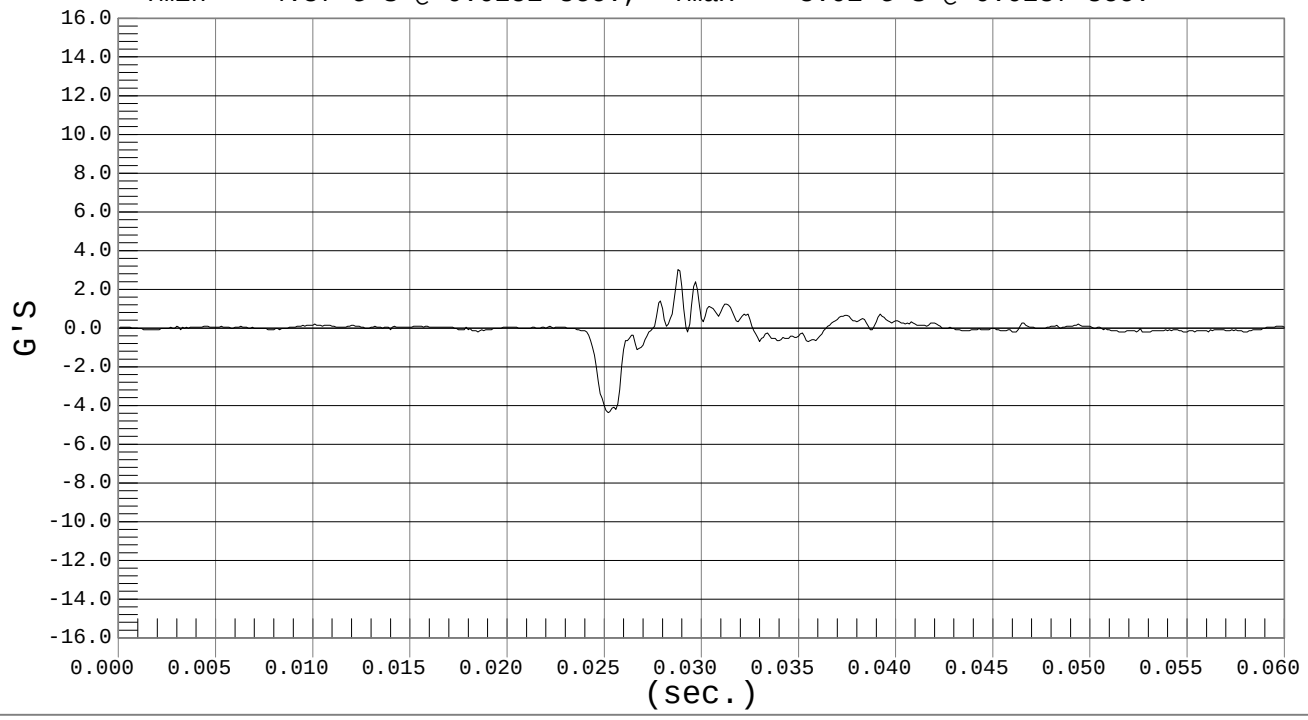


PEAK LATERAL ACCELRATION

Test Desc.: Head Drop
Component: Dummy #037

Test Date: 01-18-02
Speed: 0.0 fps, 0.00 M/s

Ymin = -4.37 G'S @ 0.0251 sec., Ymax = 3.01 G'S @ 0.0287 sec.



SID Calibration Data Sheet

Side Impact Dummy

Thorax Impact Calibration

ATD Serial No.:037 Test I.D.:D02092

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	20.7	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	44	Pass
Lower Rib	G's	37 – 46	44	Pass
Lower Spine	G's	15 - 22	20	Pass
		Overall Test Results		Pass

1/18/02

Laboratory Technician Test Date

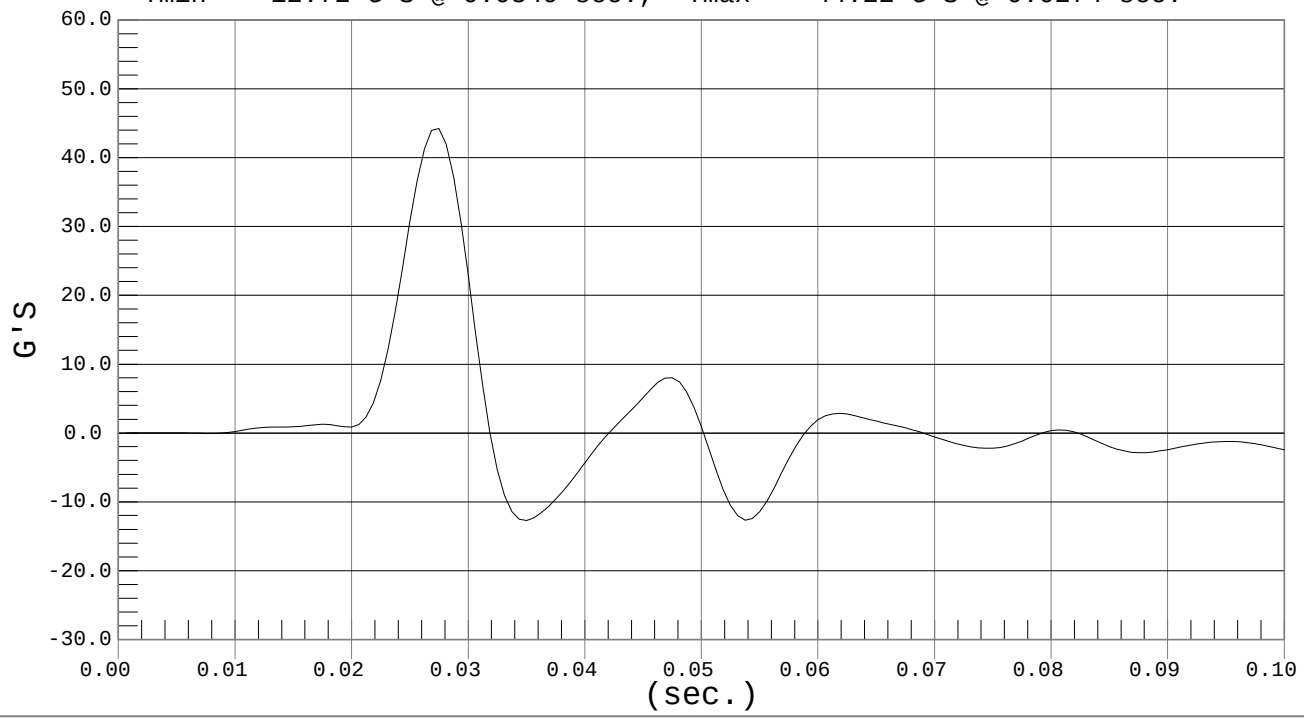
Approved By

UPPER RIB ACCELERATION

Test Desc.: Thorax Impact
Component: Dummy #037

Test Date: 01-18-02
Speed: 14.0 fps, 4.28 M/s

Ymin = -12.72 G'S @ 0.0349 sec., Ymax = 44.22 G'S @ 0.0274 sec.

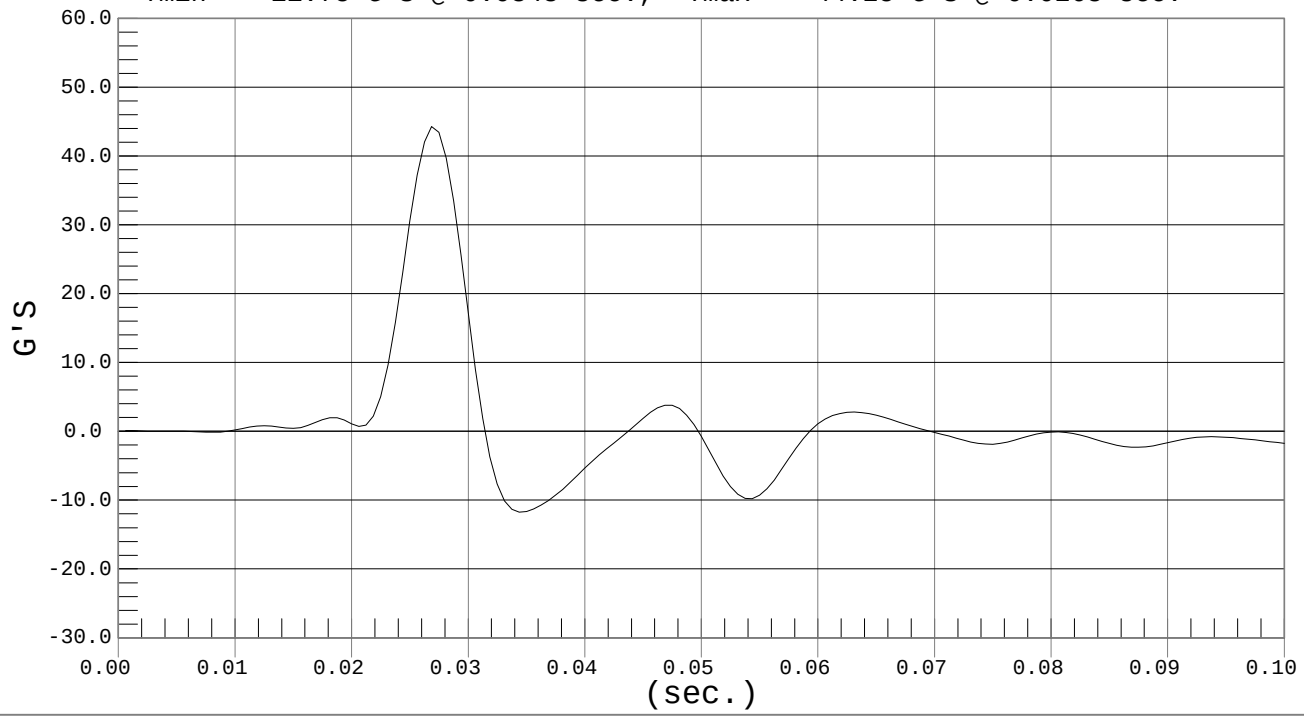


LOWER RIB ACCELERATION

Test Desc.: Thorax Impact
Component: Dummy #037

Test Date: 01-18-02
Speed: 14.0 fps, 4.28 M/s

Ymin = -11.75 G'S @ 0.0343 sec., Ymax = 44.25 G'S @ 0.0268 sec.

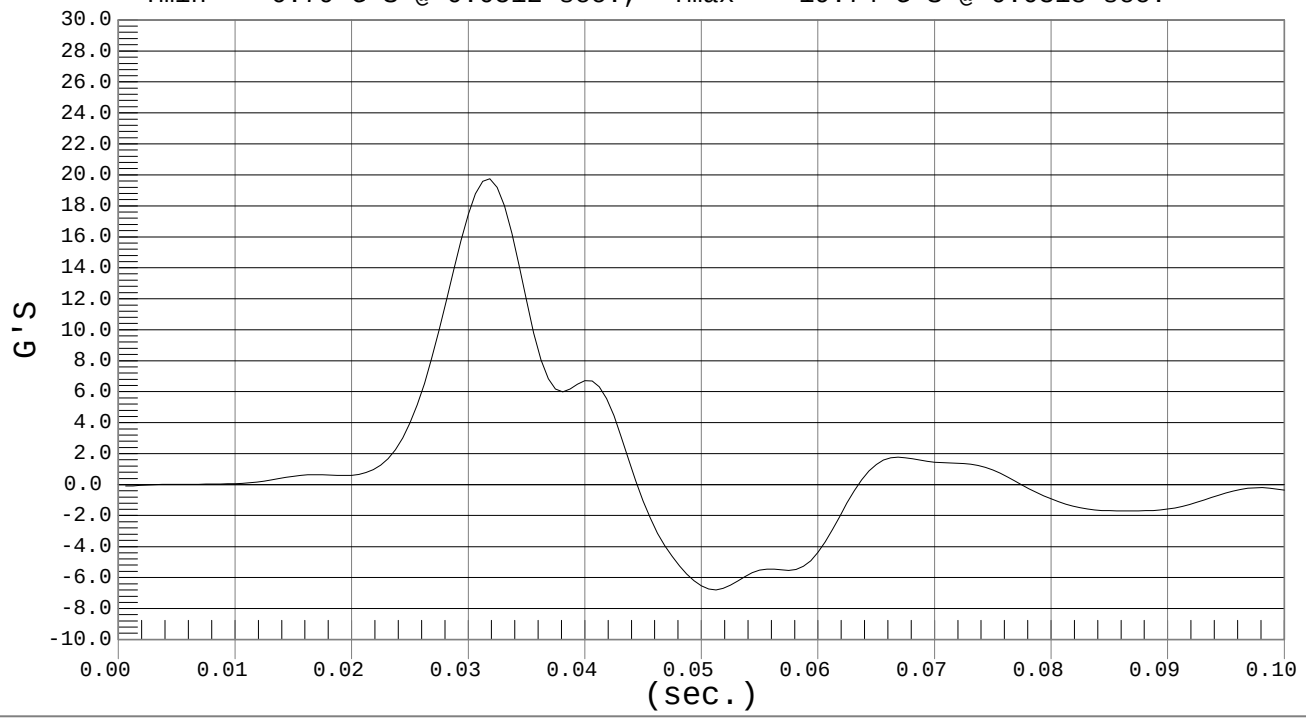


LOWER SPINE ACCELERATION

Test Desc.: Thorax Impact
Component: Dummy #037

Test Date: 01-18-02
Speed: 14.0 fps, 4.28 M/s

Ymin = -6.79 G'S @ 0.0512 sec., Ymax = 19.74 G'S @ 0.0318 sec.



SID Calibration Data Sheet

Side Impact Dummy

Pelvis Impact Calibration

ATD Serial No.:037 Test I.D.:D02093

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	20.6	Pass
Laboratory Relative Humidity	%	10 to 70	21	Pass
Probe Speed	m/s	4.27 – 4.33	4.30	Pass
Pelvis Acceleration	G's	40 - 60	48	Pass
		Overall Test Results		Pass

1/18/02

Laboratory Technician Test Date

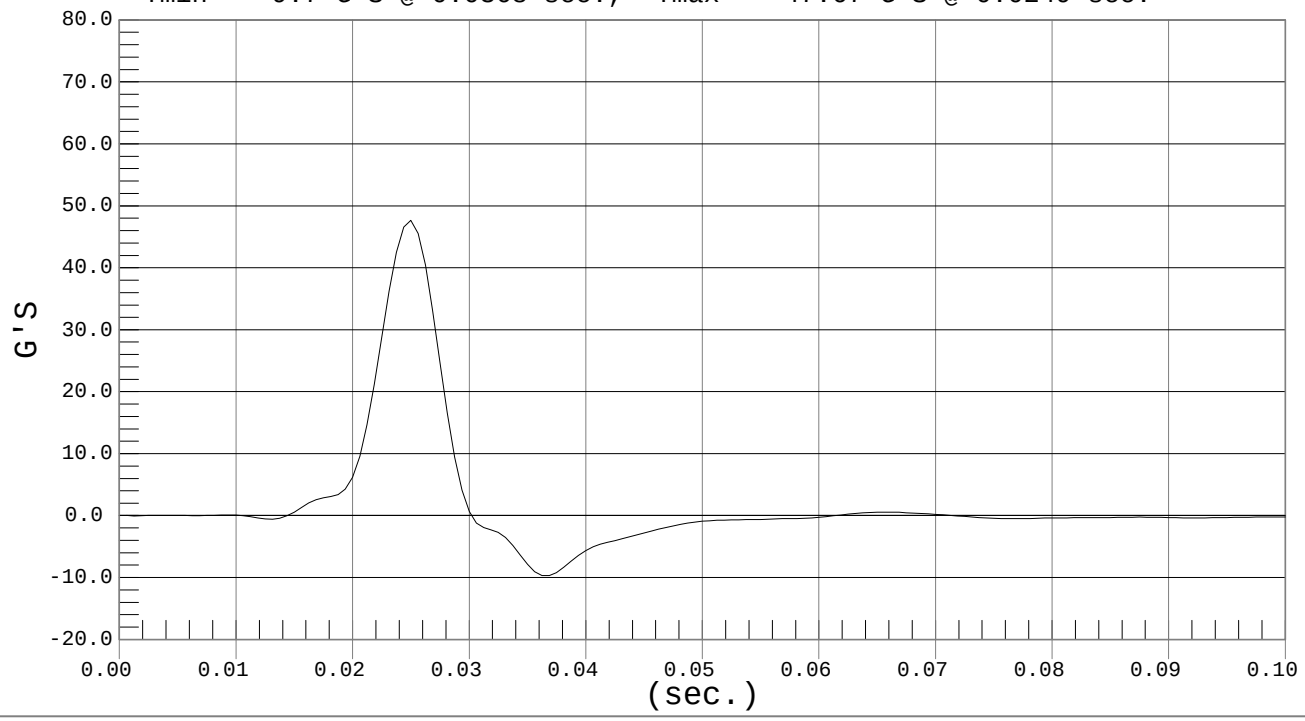
Approved By

PELVIS ACCELERATION

Test Desc.: Pelvis Impact
Component: Dummy #037

Test Date: 01-18-02
Speed: 14.1 fps, 4.30 M/s

Ymin = -9.7 G'S @ 0.0368 sec., Ymax = 47.67 G'S @ 0.0249 sec.



SID Calibration Data Sheet

Side Impact Dummy

Abdominal Compression Calibration (Preload = 10 lbs)

ATD Serial No.:037 Test I.D.:D02094

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Force @ 12.7	mm	104 – 162	137	Pass
Force @ 19	mm	163 – 222	188	Pass
Force @ 25.4	mm	222 – 280	251	Pass
Force @ 33	mm	325 - 391	353	Pass
		Overall Test Results		Pass

1/17/02

Laboratory Technician Test Date

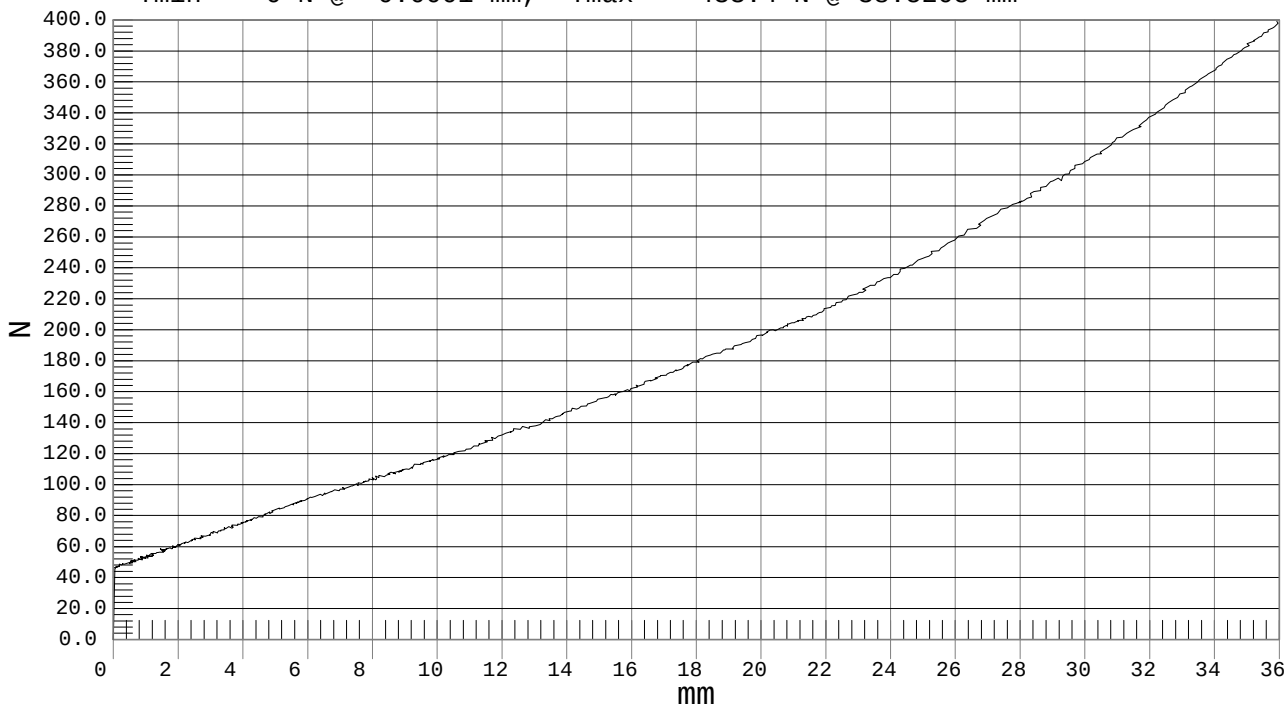
Approved By

ABDOMEN COMPRESSION

Test Desc.:ABDOMEN COMPRESSION
Component: DUMMY # 037

Test Date: 01-17-02
Speed: 0.0 fps, 0.00 M/s

Ymin = 0 N @ -0.0001 mm, Ymax = 433.4 N @ 38.5205 mm



SID Calibration Data Sheet

Side Impact Dummy

Lumbar Flexion Calibration

ATD Serial No.:037 Test I.D.:D02095

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	20.6	Pass
Laboratory Relative Humidity	%	10 to 70	21	Pass
Force @ 0	mm	0 – 26.7	0	Pass
Force @ 20	mm	97.9 – 151.2	100.1	Pass
Force @ 30	mm	151.2 – 204.6	159.9	Pass
Force @ 40	mm	204.6 – 258.0	231.7	Pass
Return Angle	Degrees	12 Maximum	4	Pass
		Overall Test Results		Pass

1/18/02

Laboratory Technician Test Date

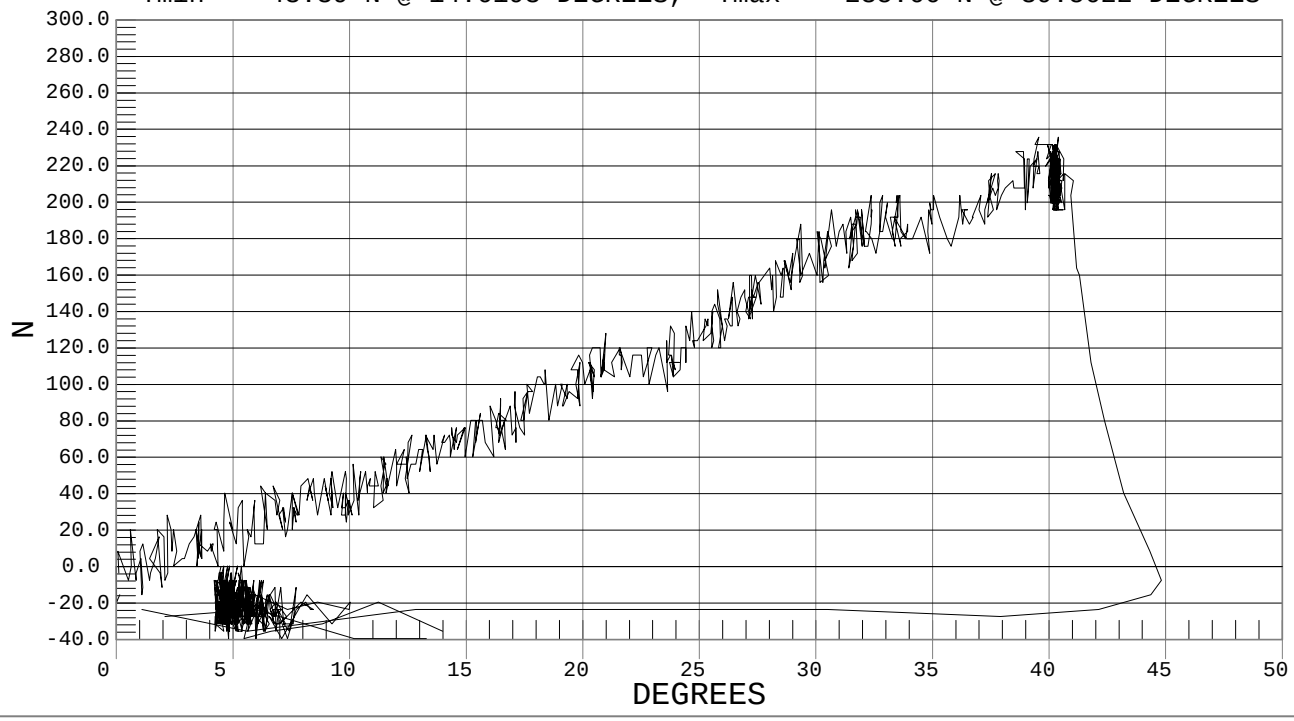
Approved By

LUMBAR FLEXION

Test Desc.:LUMBAR FLEXION
Component: DUMMY # 037

Test Date: 01-18-02
Speed: 0.0 fps, 0.00 M/s

Ymin = -43.39 N @ 14.6193 DEGREES, Ymax = 235.66 N @ 39.5622 DEGREES



SID Calibration Data Sheet

Side Impact Dummy

Inspection Checklist

ATD Serial No.:037

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

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

_____ 1/18/02

Laboratory Technician Test Date

_____

Approved By

CERTIFICATION DATA

Dummy Serial Number: 036

Calibration Test Results Summary

Dummy Serial Number: 036

Pre-Test Calibration

External Dimensions:	The dummy passed all external dimension requirements.
Head Drop Test:	The head passed all drop test requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis passed all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion Test:	The lumbar passed all flexion test requirements.

SID Calibration Data Sheet

Side Impact Dummy

External Measurements

ATD Serial No.:036 Test Number:D0208

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

1/18/02

Laboratory Technician Test Date

Approved By

SID Calibration Data Sheet

Side Impact Dummy

Head Drop Calibration

ATD Serial No.:036 Test I.D.:D02081

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	20.6	Pass
Laboratory Relative Humidity	%	10 to 70	20	Pass
Peak Resultant Acceleration	G's	210 to 260	236	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

_____ 1/18/02

Laboratory Technician Test Date

_____

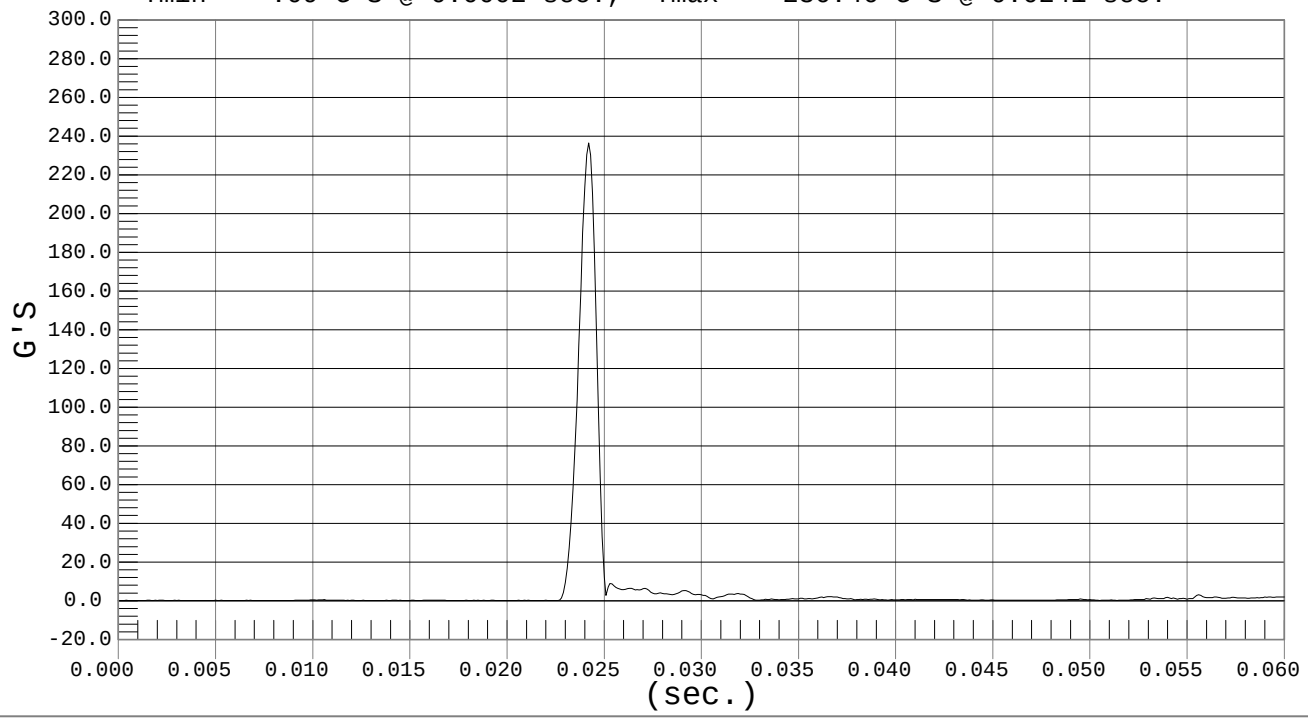
Approved By

PEAK RESULTANT ACCELERATION

Test Desc.: Head Drop
Component: Dummy #036

Test Date: 01-18-02
Speed: 0.0 fps, 0.00 M/s

Ymin = .09 G'S @ 0.0002 sec., Ymax = 236.46 G'S @ 0.0241 sec.

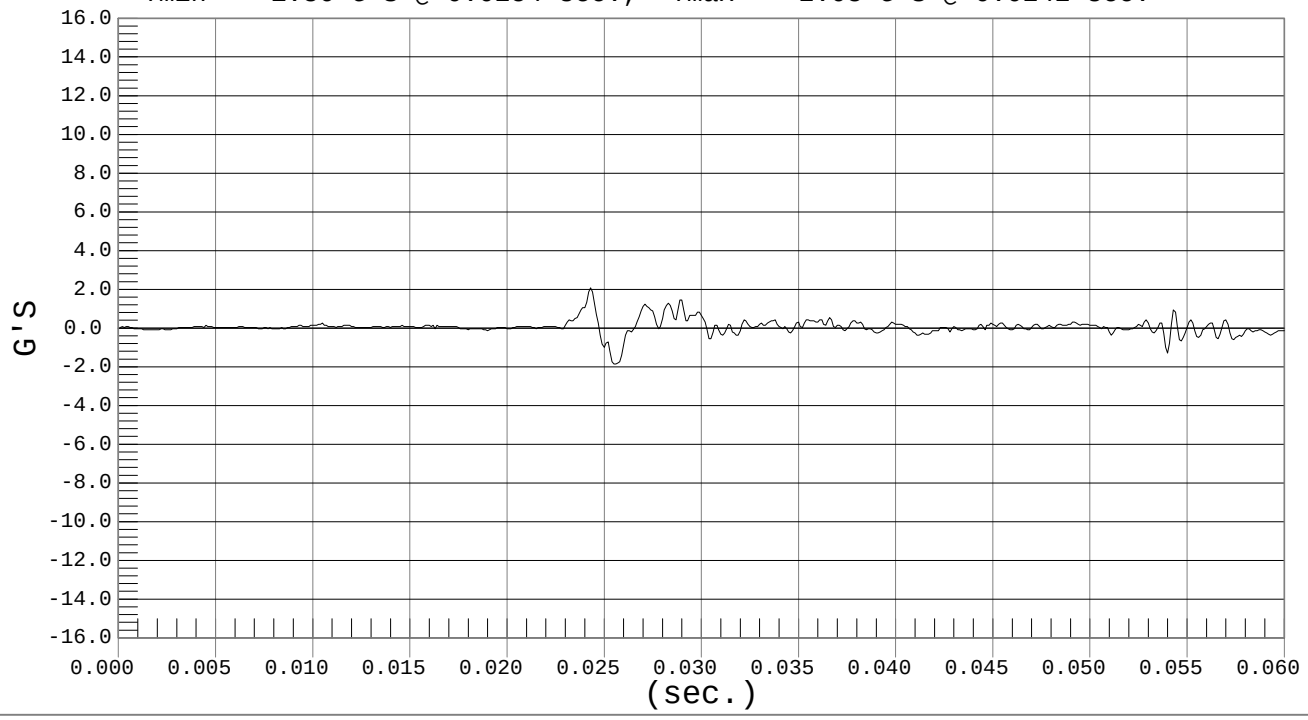


PEAK LATERAL ACCELRATION

Test Desc.: Head Drop
Component: Dummy #036

Test Date: 01-18-02
Speed: 0.0 fps, 0.00 M/s

Ymin = -1.86 G'S @ 0.0254 sec., Ymax = 2.08 G'S @ 0.0242 sec.



SID Calibration Data Sheet

Side Impact Dummy

Thorax Impact Calibration

ATD Serial No.:036 Test I.D.:D02082

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	20.7	Pass
Laboratory Relative Humidity	%	10 to 70	23	Pass
Probe Velocity	m/s	4.27 – 4.33	4.30	Pass
Upper Rib	G's	37 – 46	44	Pass
Lower Rib	G's	37 – 46	46	Pass
Lower Spine	G's	15 - 22	19	Pass
		Overall Test Results		Pass

1/17/02

Laboratory Technician Test Date

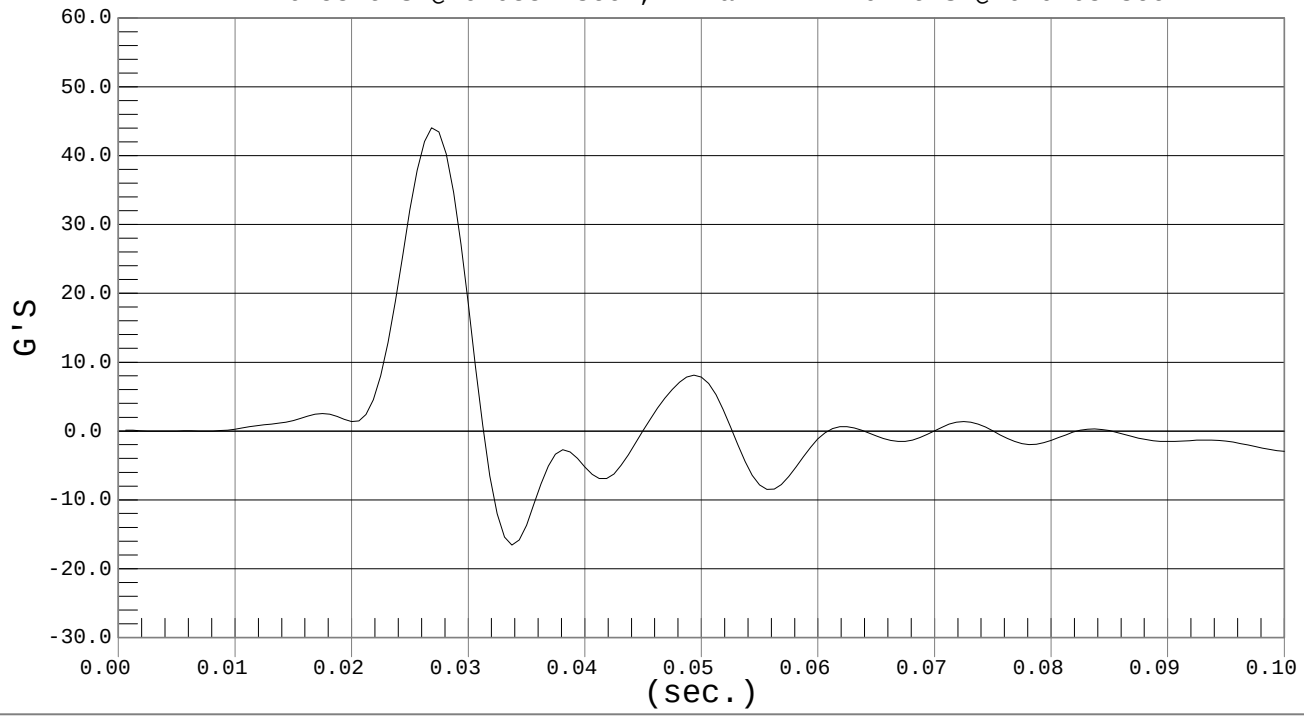
Approved By

UPPER RIB ACCELERATION

Test Desc.: Thorax Impact
Component: Dummy #036

Test Date: 01-17-02
Speed: 14.1 fps, 4.30 M/s

Ymin = -16.58 G'S @ 0.0337 sec., Ymax = 44.04 G'S @ 0.0268 sec.

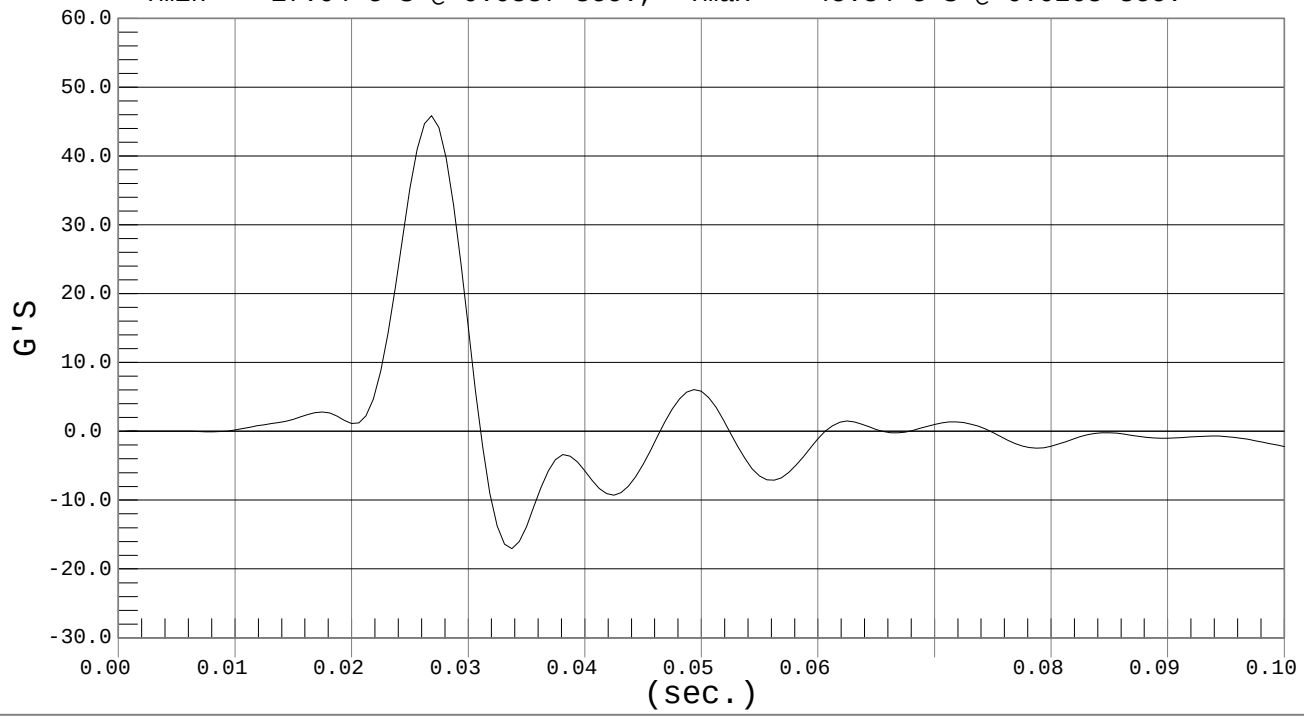


LOWER RIB ACCELERATION

Test Desc.: Thorax Impact
Component: Dummy #036

Test Date: 01-17-02
Speed: 14.1 fps, 4.30 M/s

Ymin = -17.04 G'S @ 0.0337 sec., Ymax = 45.84 G'S @ 0.0268 sec.

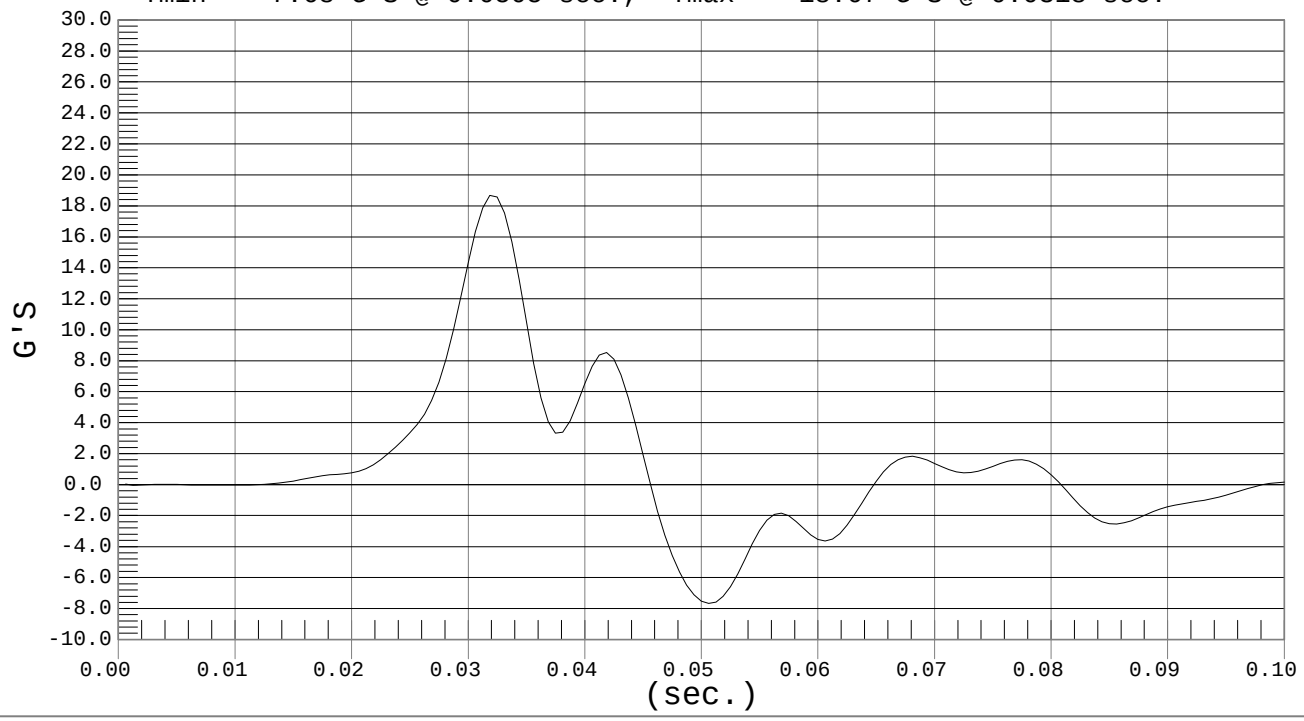


LOWER SPINE ACCELERATION

Test Desc.: Thorax Impact
Component: Dummy #036

Test Date: 01-17-02
Speed: 14.1 fps, 4.30 M/s

Ymin = -7.68 G'S @ 0.0505 sec., Ymax = 18.67 G'S @ 0.0318 sec.



SID Calibration Data Sheet

Side Impact Dummy

Pelvis Impact Calibration

ATD Serial No.:036 Test I.D.: D02083

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	20.7	Pass
Laboratory Relative Humidity	%	10 to 70	23	Pass
Probe Speed	m/s	4.27 – 4.33	4.27	Pass
Pelvis Acceleration	G's	40 - 60	46	Pass
		Overall Test Results		Pass

1/17/02

Laboratory Technician Test Date

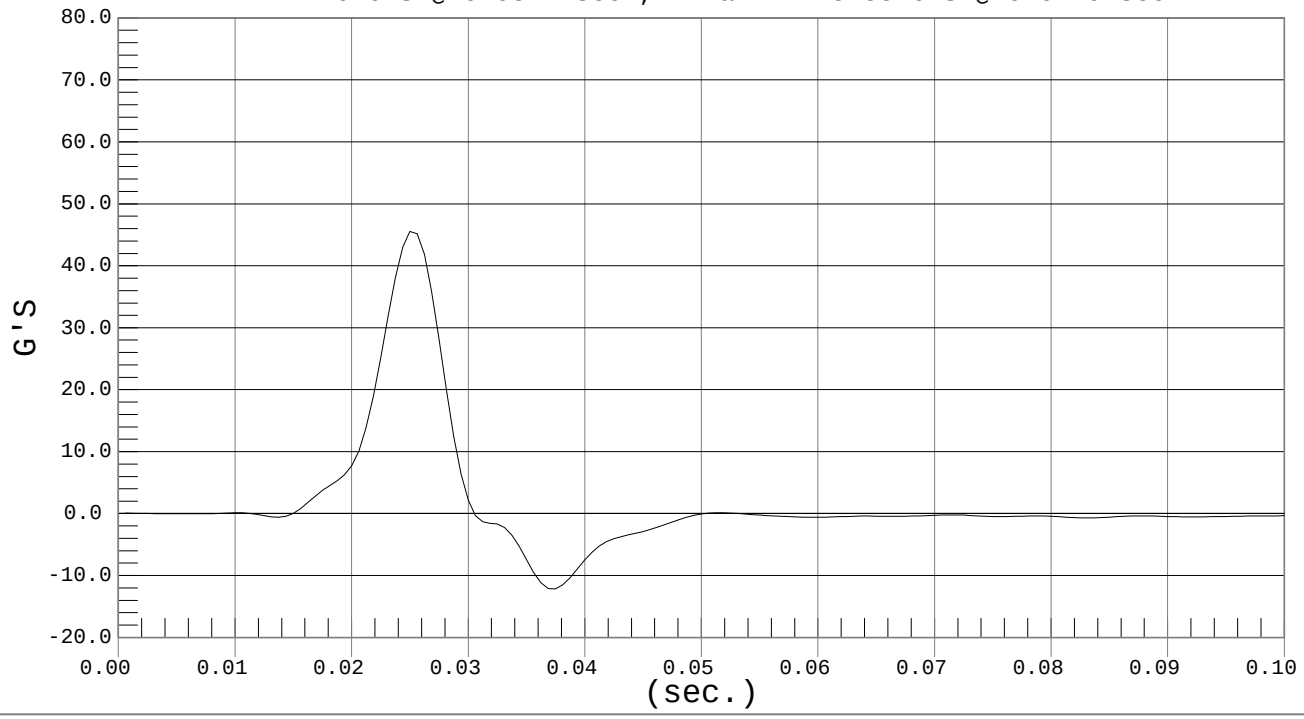
Approved By

PELVIS ACCELERATION

Test Desc.: Pelvis Impact
Component: Dummy #036

Test Date: 01-17-02
Speed: 14.0 fps, 4.27 M/s

Ymin = -12.16 G'S @ 0.0374 sec., Ymax = 45.55 G'S @ 0.0249 sec.



SID Calibration Data Sheet

Side Impact Dummy

Abdominal Compression Calibration (Preload = 10 lbs)

ATD Serial No.:037 Test I.D.:D02084

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Force @ 12.7	mm	104 – 162	137	Pass
Force @ 19	mm	163 – 222	186	Pass
Force @ 25.4	mm	222 – 280	249	Pass
Force @ 33	mm	325 - 391	341	Pass
		Overall Test Results		Pass

_____ 1/17/02

Laboratory Technician Test Date

_____

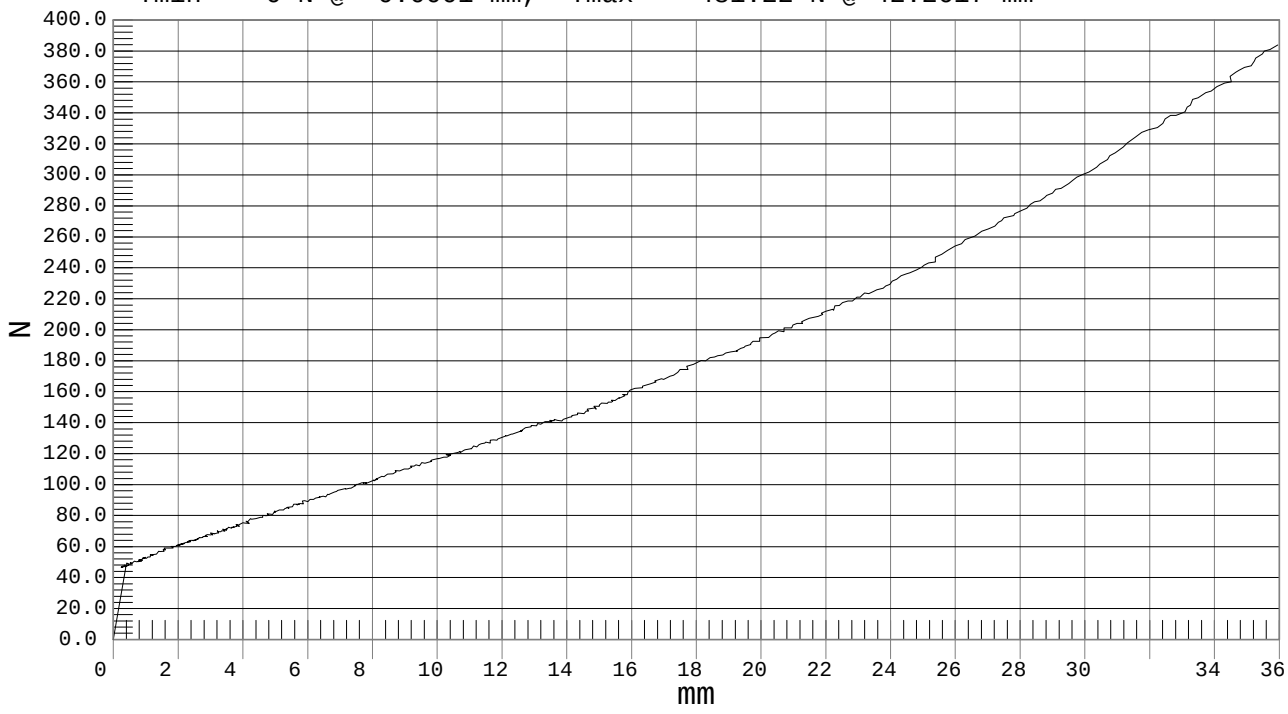
Approved By

ABDOMEN COMPRESSION

Test Desc.:ABDOMEN COMPRESSION
Component: DUMMY # 036

Test Date: 01-17-02
Speed: 0.0 fps, 0.00 M/s

Ymin = 0 N @ -0.0001 mm, Ymax = 481.22 N @ 42.2617 mm



SID Calibration Data Sheet

Side Impact Dummy

Lumbar Flexion Calibration

ATD Serial No.:036 Test I.D.:D02085

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Force @ 0	mm	0 – 26.7	0	Pass
Force @ 20	mm	97.9 – 151.2	121.8	Pass
Force @ 30	mm	151.2 – 204.6	165.6	Pass
Force @ 40	mm	204.6 – 258.0	229.4	Pass
Return Angle	Degrees	12 Maximum	4	Pass
		Overall Test Results		Pass

Laboratory Technician

1/17/02
Test Date

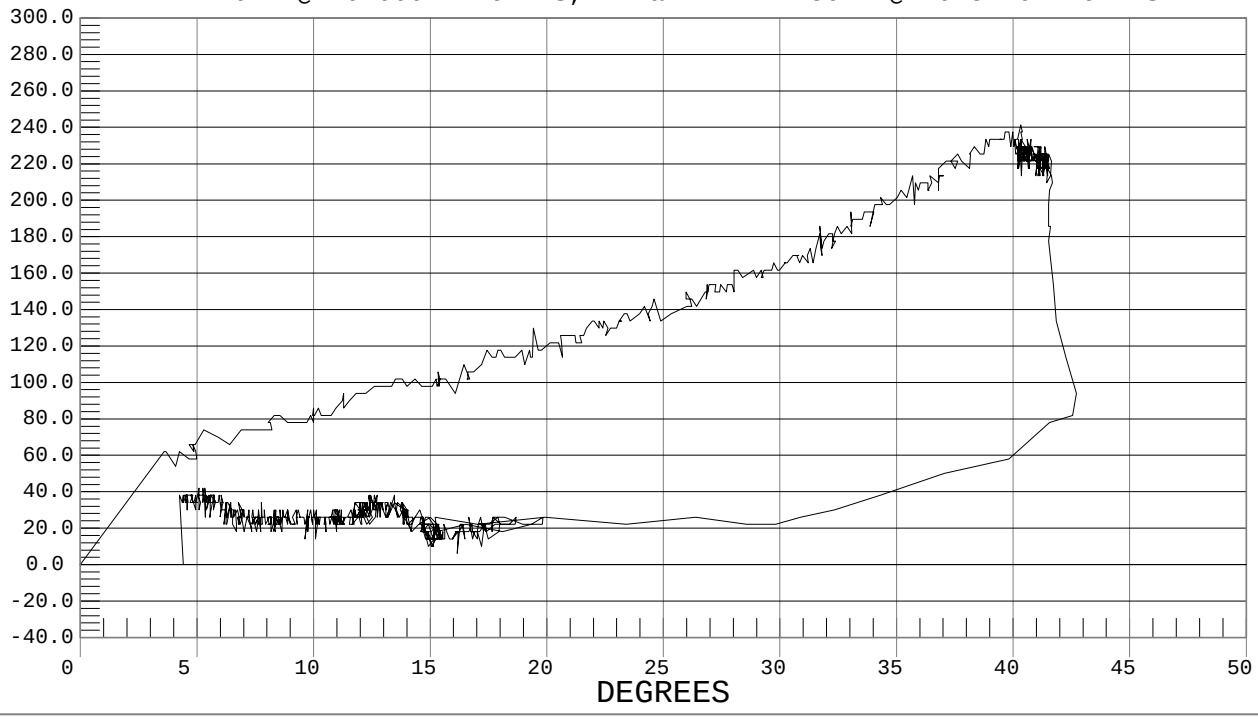
Approved By

LUMBAR FLEXION

Test Desc.:LUMBAR FLEXION
Component: DUMMY # 036

Test Date: 01-17-02
Speed: 0.0 fps, 0.00 M/s

Ymin = 0 N @ -0.0001 DEGREES, Ymax = 241.36 N @ 40.3216 DEGREES



SID Calibration Data Sheet

Side Impact Dummy

Inspection Checklist

ATD Serial No.:036

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

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

_____ 1/18/02

Laboratory Technician Test Date

_____

Approved By

CERTIFICATION DATA

Dummy Serial Number:037

Calibration Test Results Summary

Dummy Serial Number: 037

Post-Test Calibration

External Dimensions:	The dummy passed all external dimension requirements.
Head Drop Test:	The head passed all drop test requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis passed all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion Test:	The lumbar passed all flexion test requirements.

SID Calibration Data Sheet

Side Impact Dummy

External Measurements

ATD Serial No.:037 Test Number:D0223

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

2/15/02

Laboratory Technician Test Date

Approved By

SID Calibration Data Sheet

Side Impact Dummy

Head Drop Calibration

ATD Serial No.:037 Test I.D.:D02231

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	22	Pass
Peak Resultant Acceleration	G's	210 to 260	220	Pass
Peak Lateral Acceleration	G's	< 10	2	Pass
Time Above 100 G	msec	0.9 – 1.5	1.2	Pass
		Overall Test Results		Pass

_____ 1/14/02

Laboratory Technician Test Date

_____

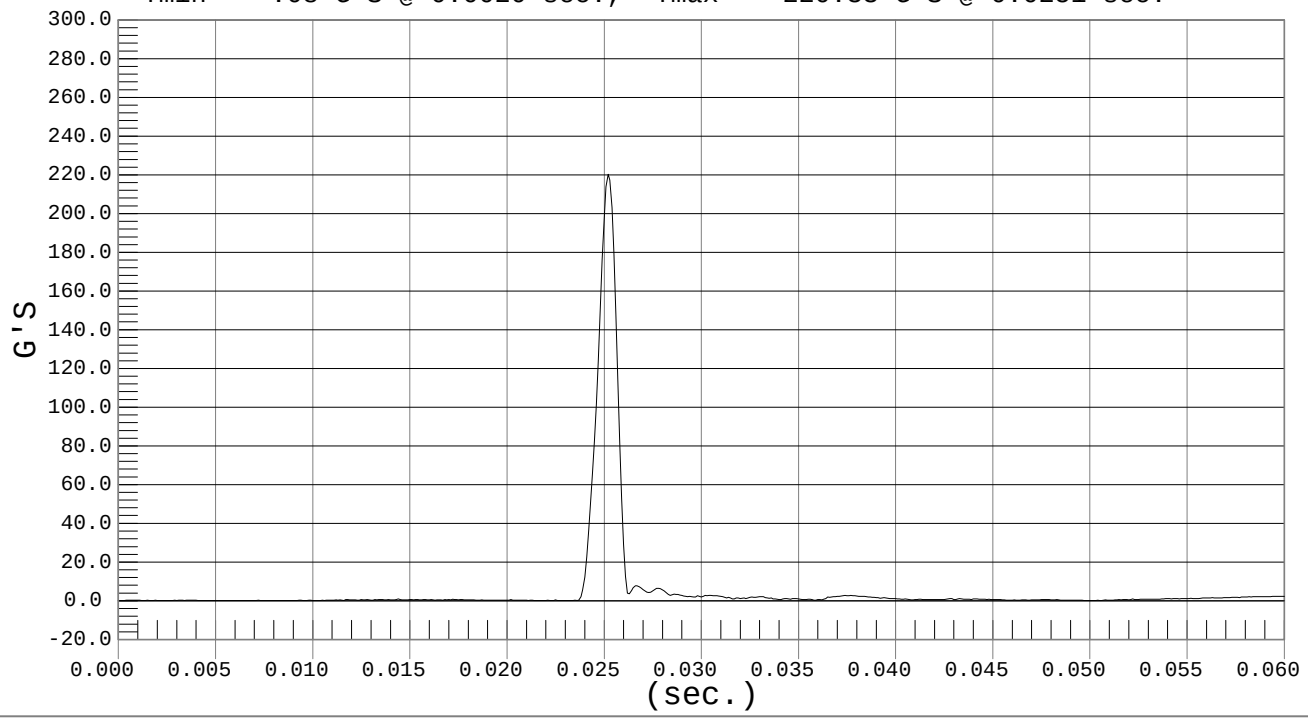
Approved By

PEAK RESULTANT ACCELERATION

Test Desc.: Head Drop
Component: Dummy #037

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

Ymin = .08 G'S @ 0.0020 sec., Ymax = 220.33 G'S @ 0.0251 sec.

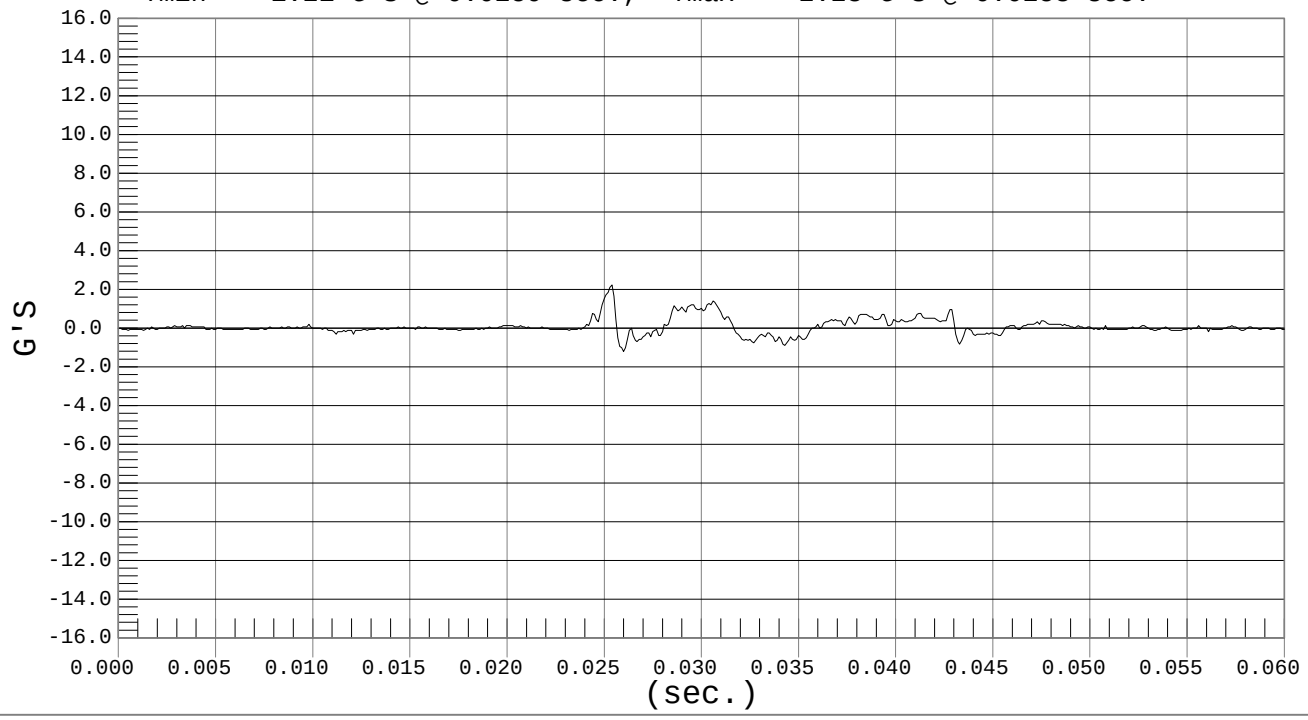


PEAK LATERAL ACCELRATION

Test Desc.: Head Drop
Component: Dummy #037

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

Ymin = -1.21 G'S @ 0.0259 sec., Ymax = 2.23 G'S @ 0.0253 sec.



SID Calibration Data Sheet

Side Impact Dummy

Thorax Impact Calibration

ATD Serial No.:037 Test I.D.: D02232

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	22.3	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	41	Pass
Lower Rib	G's	37 – 46	43	Pass
Lower Spine	G's	15 - 22	19	Pass
		Overall Test Results		Pass

2/15/02

Laboratory Technician Test Date

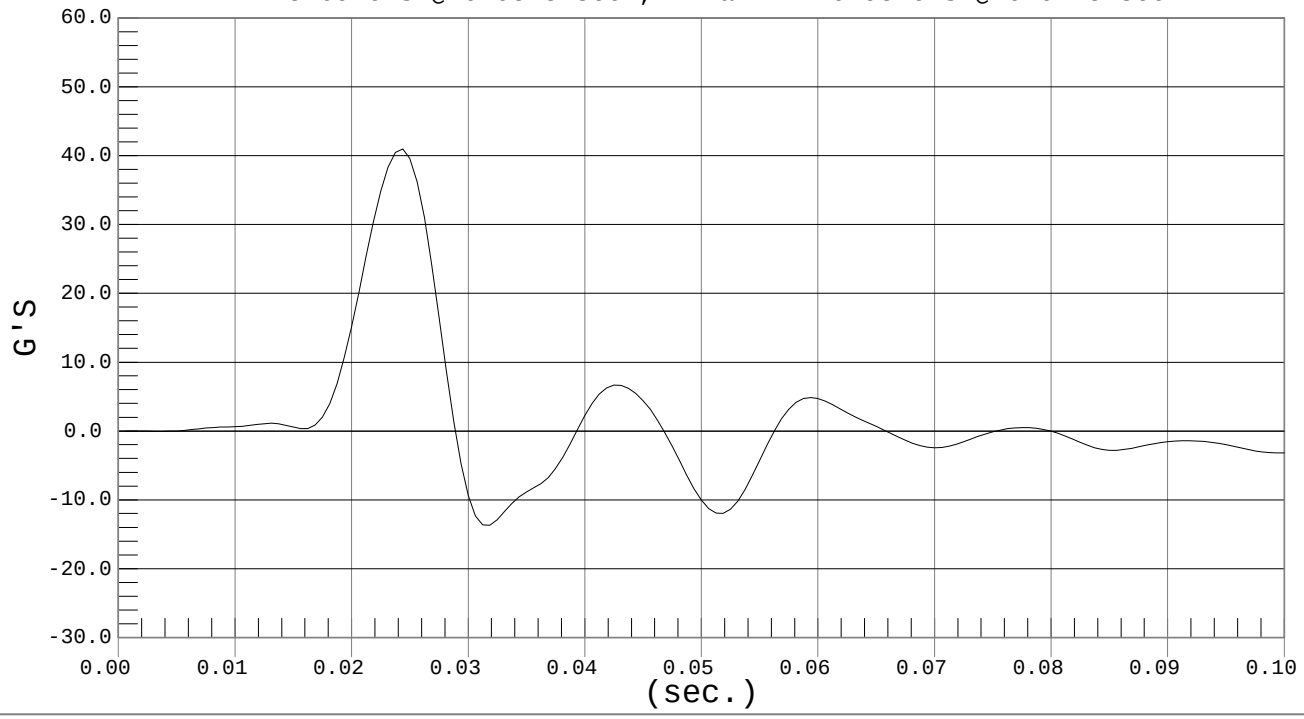
Approved By

UPPER RIB ACCELERATION

Test Desc.: Thorax Impact
Component: Dummy #037

Test Date: 02-15-02
Speed: 14.0 fps, 4.28 M/s

Ymin = -13.69 G'S @ 0.0318 sec., Ymax = 40.98 G'S @ 0.0243 sec.

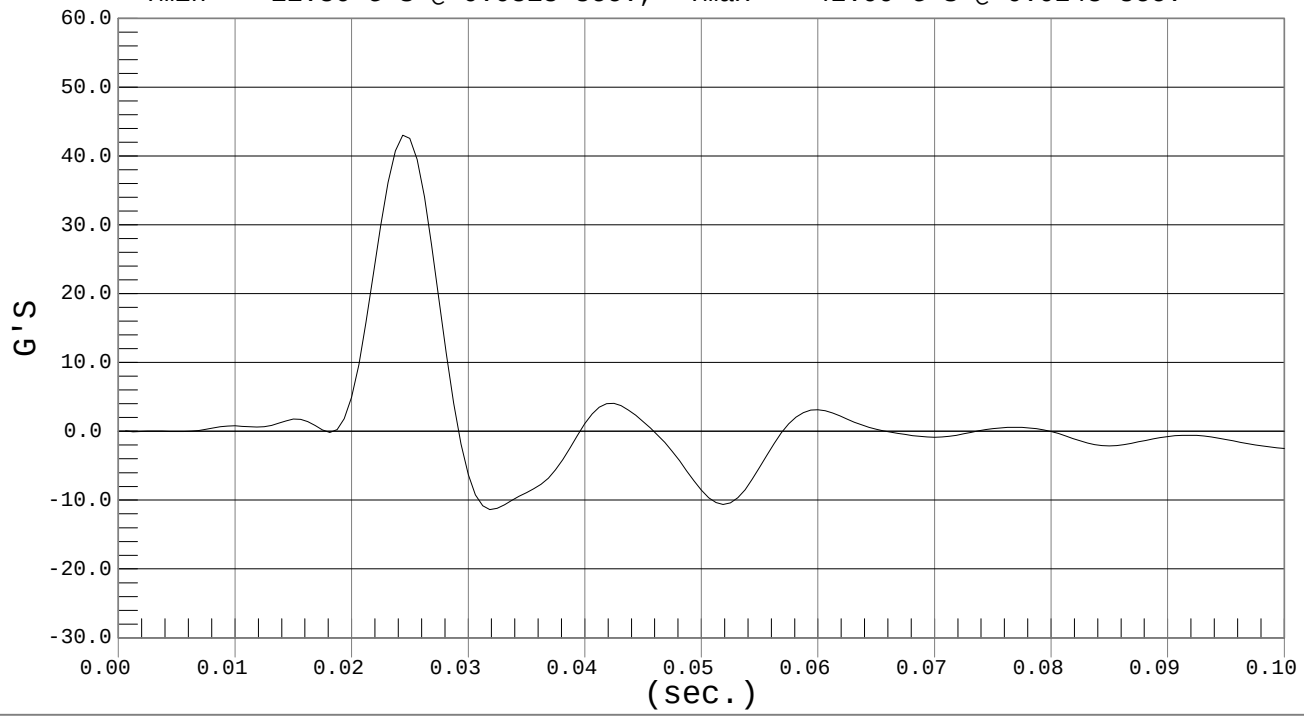


LOWER RIB ACCELERATION

Test Desc.: Thorax Impact
Component: Dummy #037

Test Date: 02-15-02
Speed: 14.0 fps, 4.28 M/s

Ymin = -11.36 G'S @ 0.0318 sec., Ymax = 42.99 G'S @ 0.0243 sec.

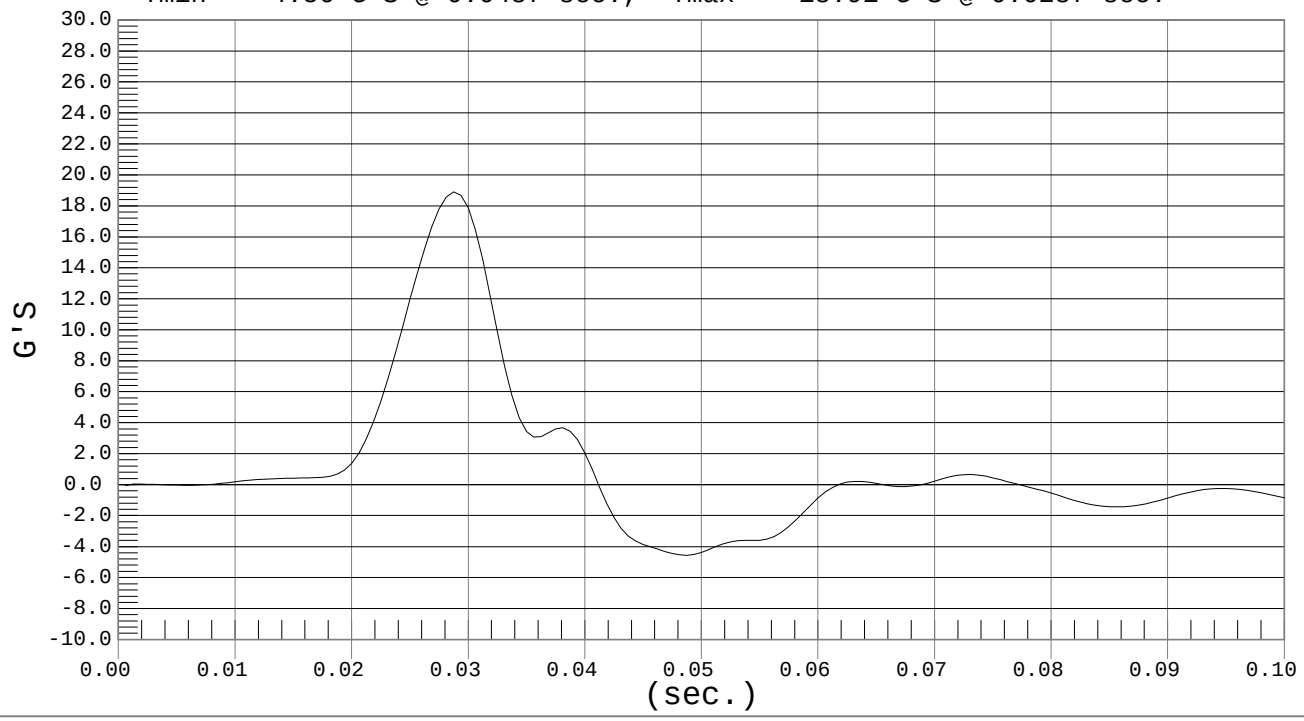


LOWER SPINE ACCELERATION

Test Desc.: Thorax Impact
Component: Dummy #037

Test Date: 02-15-02
Speed: 14.0 fps, 4.28 M/s

Ymin = -4.56 G'S @ 0.0487 sec., Ymax = 18.91 G'S @ 0.0287 sec.



SID Calibration Data Sheet

Side Impact Dummy

Pelvis Impact Calibration

ATD Serial No.:037 Test I.D.:D02233

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	22.3	Pass
Laboratory Relative Humidity	%	10 to 70	21	Pass
Probe Speed	m/s	4.27 – 4.33	4.27	Pass
Pelvis Acceleration	G's	40 - 60	48	Pass
		Overall Test Results		Pass

_____ 2/15/02

Laboratory Technician Test Date

_____

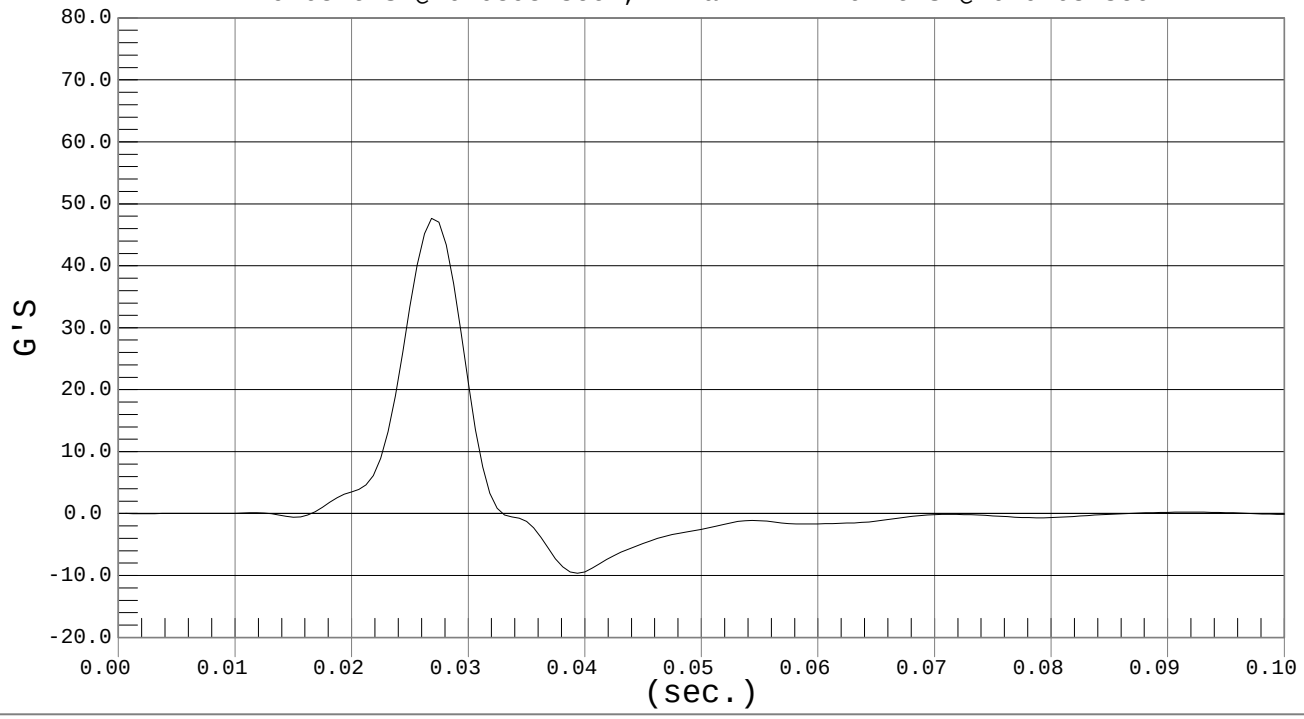
Approved By

PELVIS ACCELERATION

Test Desc.: Pelvis Impact
Component: Dummy #037

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

Ymin = -9.63 G'S @ 0.0393 sec., Ymax = 47.67 G'S @ 0.0268 sec.



SID Calibration Data Sheet

Side Impact Dummy

Abdominal Compression Calibration (Preload = 10 lbs)

ATD Serial No.:037 Test I.D.:D02234

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	21	Pass
Force @ 12.7	mm	104 – 162	126	Pass
Force @ 19	mm	163 – 222	181	Pass
Force @ 25.4	mm	222 – 280	245	Pass
Force @ 33	mm	325 - 391	351	Pass
		Overall Test Results		Pass

2/14/02

Laboratory Technician Test Date

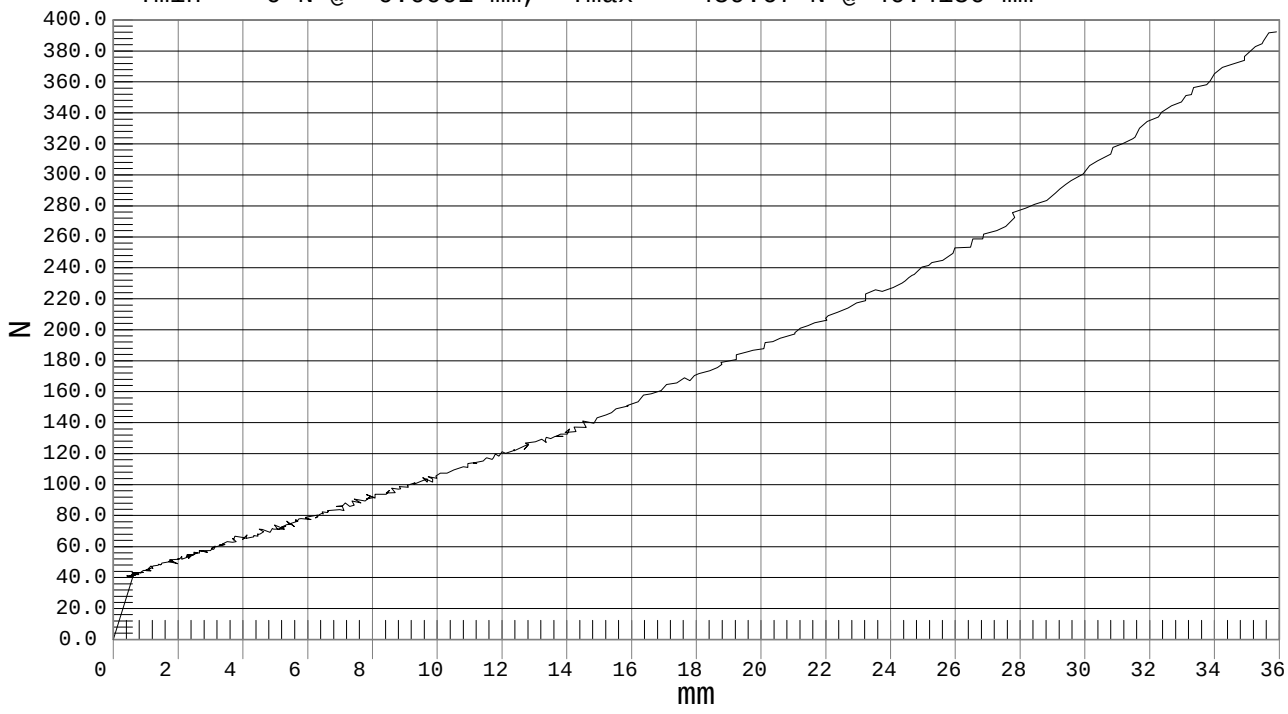
Approved By

ABDOMEN COMPRESSION

Test Desc.:ABDOMEN COMPRESSION
Component: DUMMY # 037

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

Ymin = 0 N @ -0.0001 mm, Ymax = 459.67 N @ 40.4150 mm



SID Calibration Data Sheet

Side Impact Dummy

Lumbar Flexion Calibration

ATD Serial No.:037 Test I.D.:D02235

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	21	Pass
Force @ 0	mm	0 – 26.7	0	Pass
Force @ 20	mm	97.9 – 151.2	134.2	Pass
Force @ 30	mm	151.2 – 204.6	166.4	Pass
Force @ 40	mm	204.6 – 258.0	238.7	Pass
Return Angle	Degrees	12 Maximum	5	Pass
		Overall Test Results		Pass

Laboratory Technician

2/14/02
Test Date

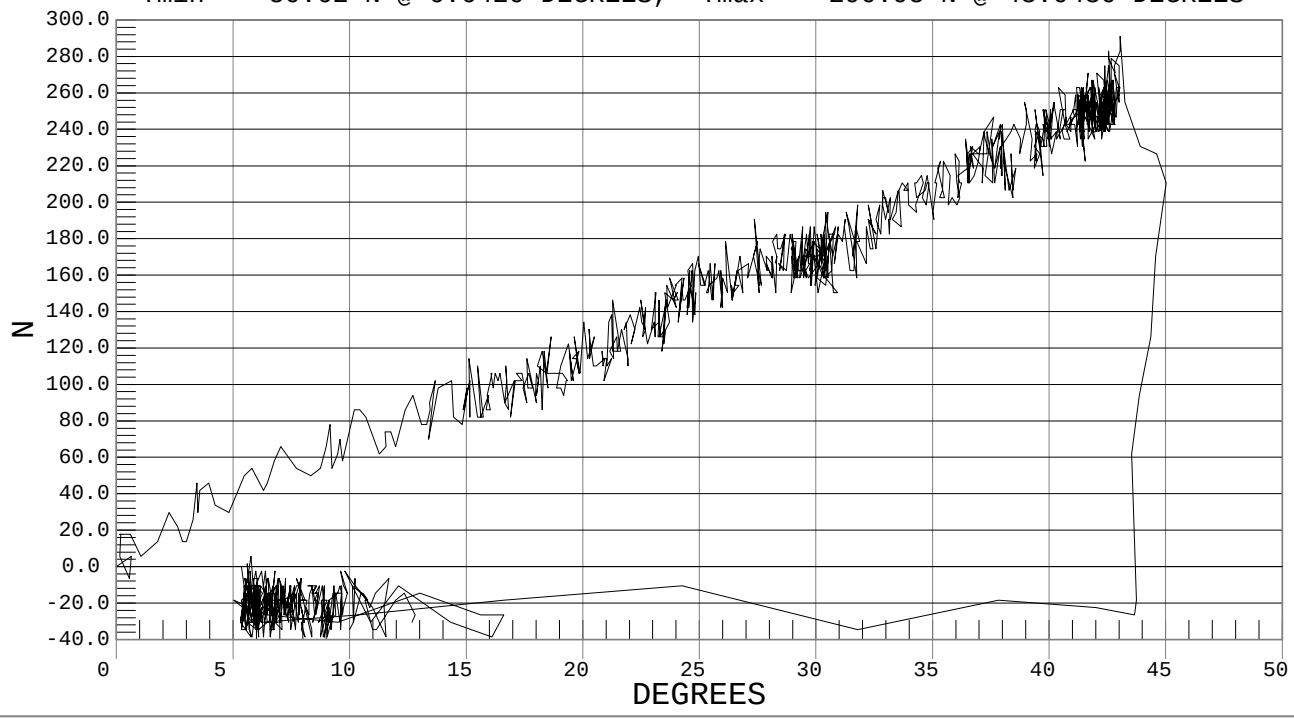
Approved By

LUMBAR FLEXION

Test Desc.:LUMBAR FLEXION
Component: DUMMY # 037

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

Ymin = -50.62 N @ 6.6420 DEGREES, Ymax = 290.95 N @ 43.0430 DEGREES



SID Calibration Data Sheet

Side Impact Dummy

Inspection Checklist

ATD Serial No.:037

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

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

_____ 2/15/02

Laboratory Technician Test Date

_____

Approved By

CERTIFICATION DATA

Dummy Serial Number: 036

Calibration Test Results Summary

Dummy Serial Number: 036

Post-Test Calibration

External Dimensions:	The dummy passed all external dimension requirements.
Head Drop Test:	The head passed all drop test requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis passed all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion Test:	The lumbar passed all flexion test requirements.

SID Calibration Data Sheet

Side Impact Dummy

External Measurements

ATD Serial No.:036 Test Number:D0222

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

2/19/02

Laboratory Technician Test Date

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SID Calibration Data Sheet

Side Impact Dummy

Head Drop Calibration

ATD Serial No.: 036 Test I.D.: D02221

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	22	Pass
Peak Resultant Acceleration	G's	210 to 260	230	Pass
Peak Lateral Acceleration	G's	< 10	1	Pass
Time Above 100 G	msec	0.9 – 1.5	1.1	Pass
		Overall Test Results		Pass

_____ 2/14/02

Laboratory Technician Test Date

_____

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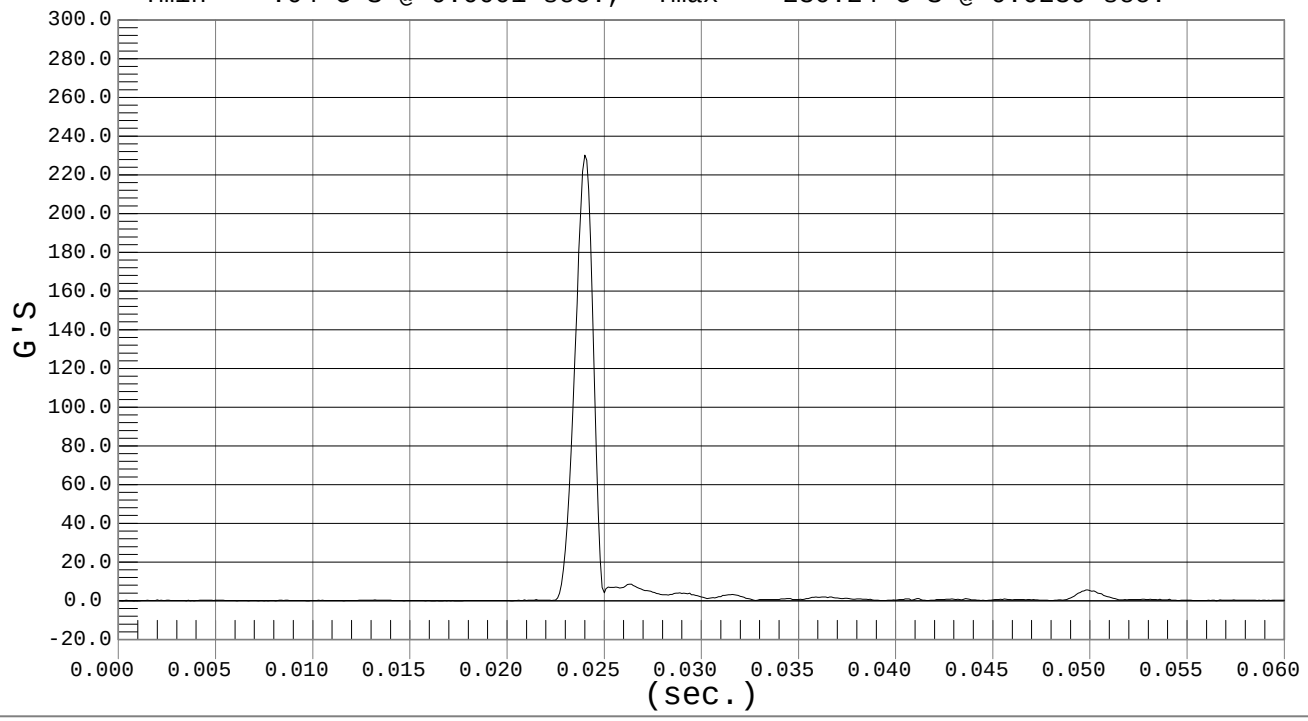
PEAK RESULTANT ACCELERATION

Test Desc.: Head Drop
Component: Dummy #036

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

Ymin = .04 G'S @ 0.0001 sec., Ymax = 230.24 G'S @ 0.0239 sec.

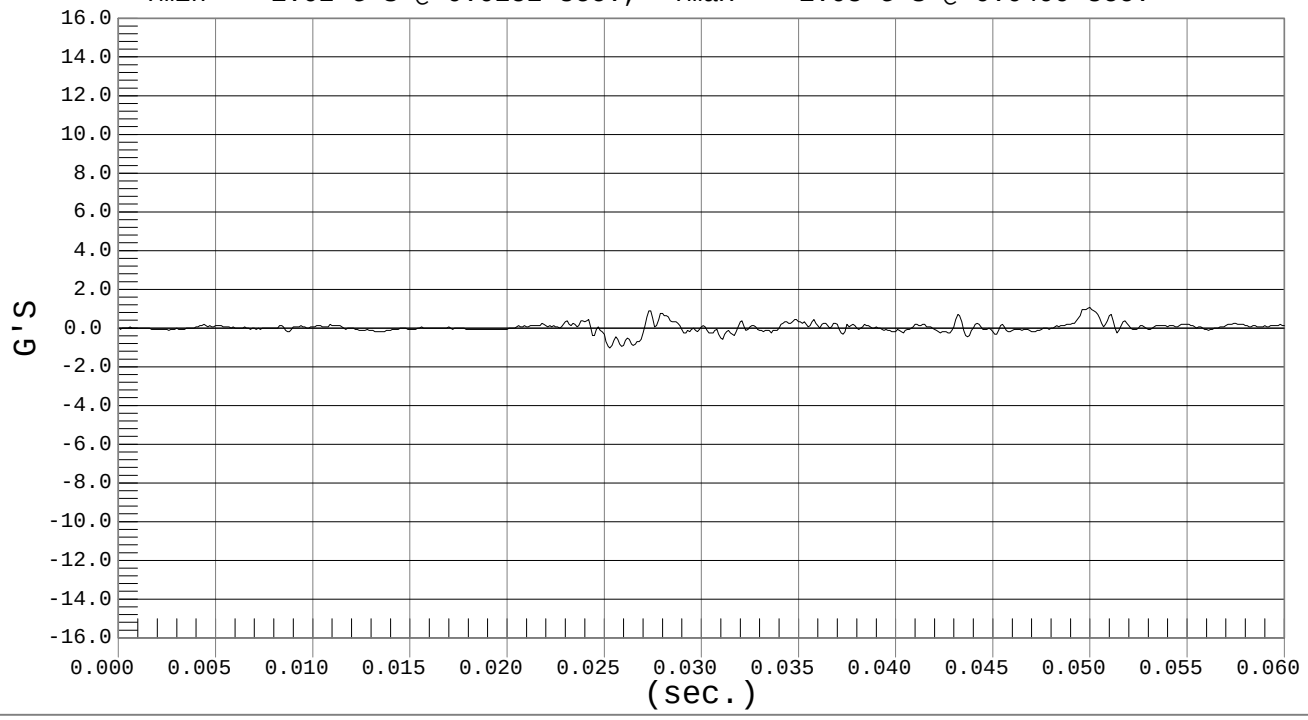


PEAK LATERAL ACCELRATION

Test Desc.: Head Drop
Component: Dummy #036

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

Ymin = -1.02 G'S @ 0.0252 sec., Ymax = 1.08 G'S @ 0.0499 sec.



SID Calibration Data Sheet

Side Impact Dummy

Thorax Impact Calibration

ATD Serial No.:036 Test I.D.:D02222

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	22.3	Pass
Laboratory Relative Humidity	%	10 to 70	21	Pass
Probe Velocity	m/s	4.27 – 4.33	4.27	Pass
Upper Rib	G's	37 – 46	45	Pass
Lower Rib	G's	37 – 46	44	Pass
Lower Spine	G's	15 - 22	18	Pass
		Overall Test Results		Pass

2/15/02

Laboratory Technician Test Date

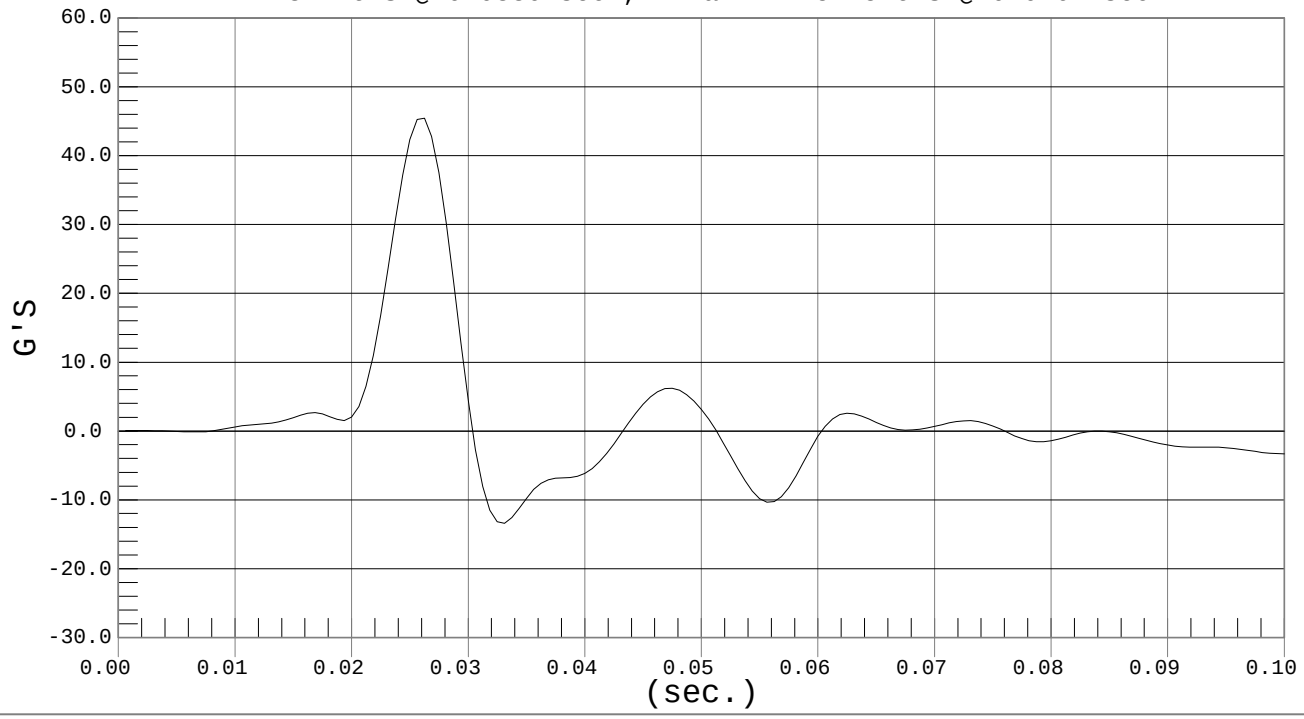
Approved By

UPPER RIB ACCELERATION

Test Desc.: Thorax Impact
Component: Dummy #036

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

Ymin = -13.4 G'S @ 0.0330 sec., Ymax = 45.45 G'S @ 0.0262 sec.

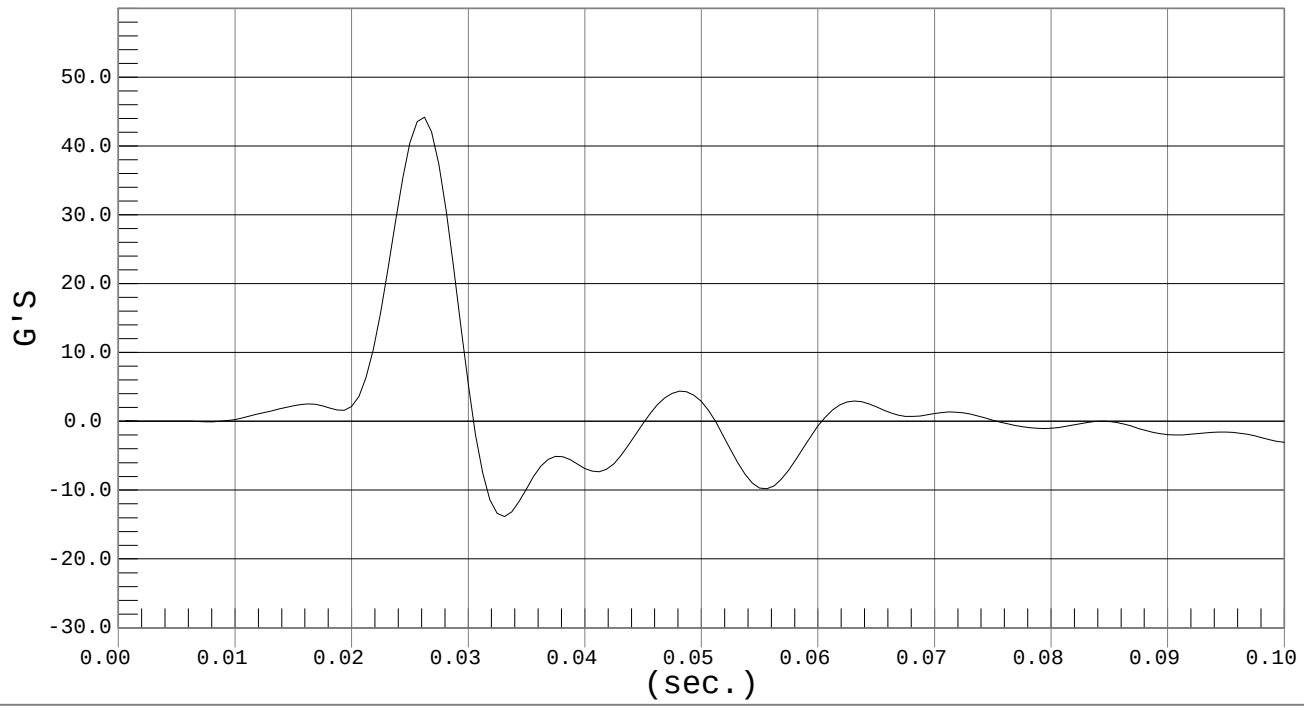


LOWER RIB ACCELERATION

Test Desc.: Thorax Impact
Component: Dummy #036

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

Ymin = -13.86 G'S @ 0.0330 sec., Ymax = 44.15 G'S @ 0.0262 sec.

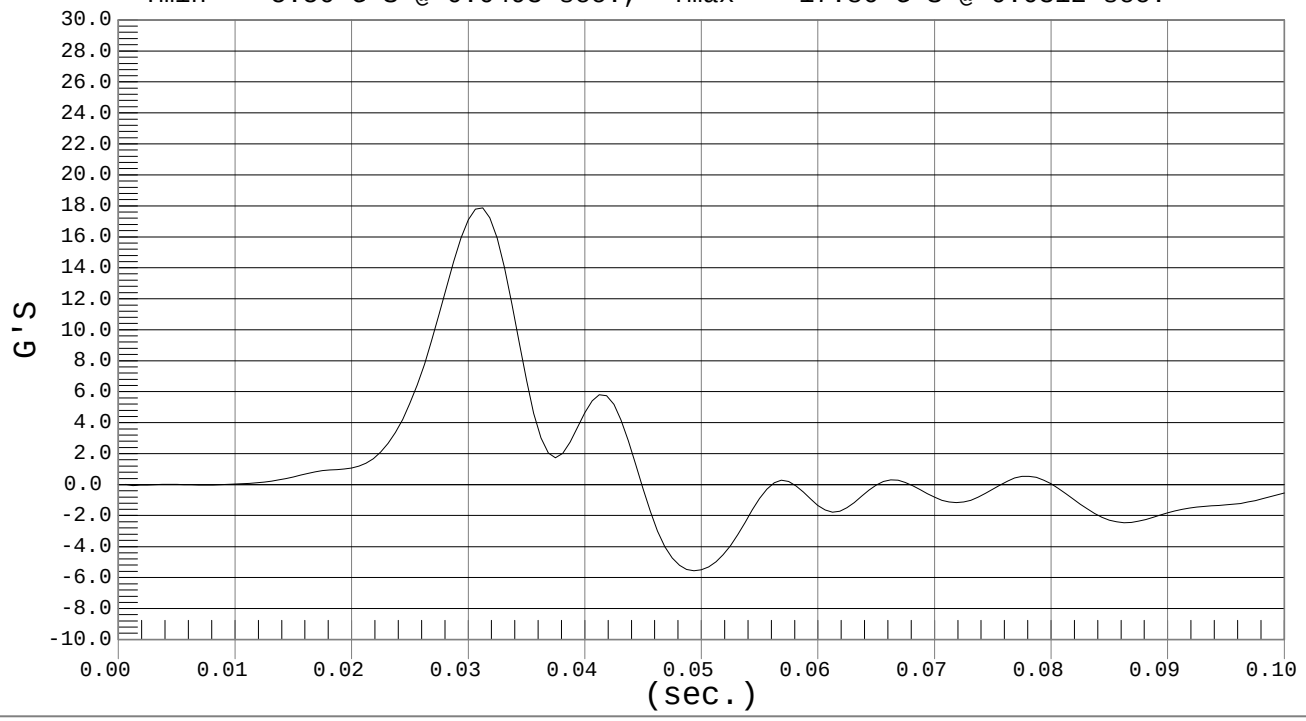


LOWER SPINE ACCELERATION

Test Desc.: Thorax Impact
Component: Dummy #036

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

Ymin = -5.56 G'S @ 0.0493 sec., Ymax = 17.86 G'S @ 0.0312 sec.



SID Calibration Data Sheet

Side Impact Dummy

Pelvis Impact Calibration

ATD Serial No.:036 Test I.D.:D02223

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	22.5	Pass
Laboratory Relative Humidity	%	10 to 70	27	Pass
Probe Speed	m/s	4.27 – 4.33	4.27	Pass
Pelvis Acceleration	G's	40 - 60	41	Pass
		Overall Test Results		Pass

_____ 2/19/02

Laboratory Technician Test Date

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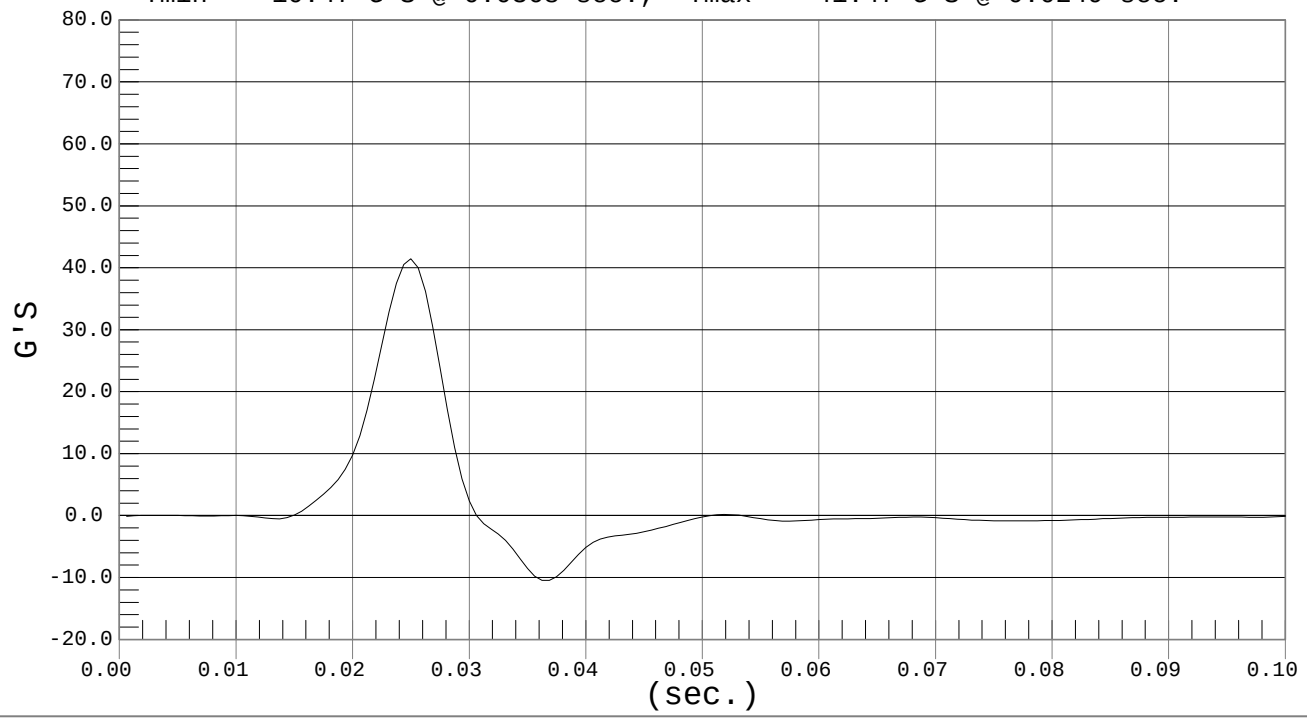
Approved By

PELVIS ACCELERATION

Test Desc.: Pelvis Impact
Component: Dummy #036

Test Date: 02-19-02
Speed: 14.0 fps, 4.27 M/s

Ymin = -10.47 G'S @ 0.0368 sec., Ymax = 41.47 G'S @ 0.0249 sec.



SID Calibration Data Sheet

Side Impact Dummy

Abdominal Compression Calibration (Preload = 10 lbs)

ATD Serial No.:036 Test I.D.:D02224

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	21	Pass
Force @ 12.7	mm	104 – 162	144	Pass
Force @ 19	mm	163 – 222	194	Pass
Force @ 25.4	mm	222 – 280	257	Pass
Force @ 33	mm	325 - 391	361	Pass
		Overall Test Results		Pass

2/14/02

Laboratory Technician Test Date

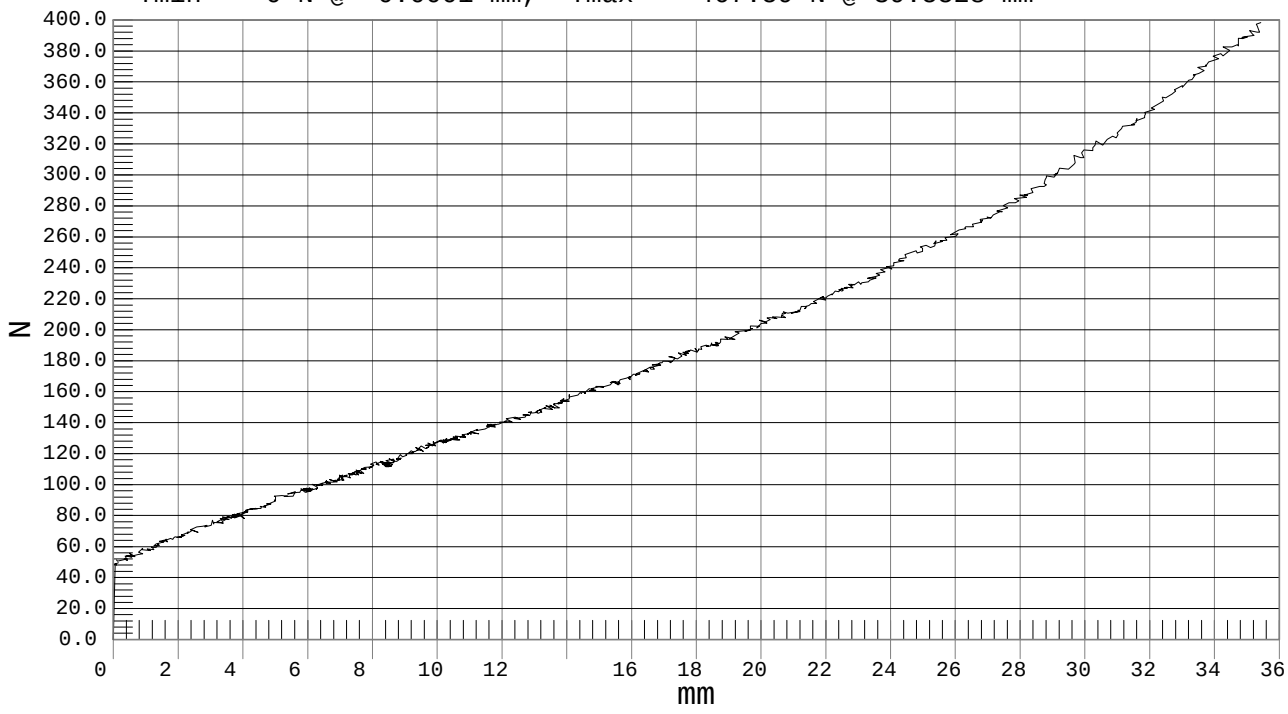
Approved By

ABDOMEN COMPRESSION

Test Desc.:ABDOMEN COMPRESSION
Component: DUMMY # 036

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

Ymin = 0 N @ -0.0001 mm, Ymax = 467.59 N @ 39.5528 mm



SID Calibration Data Sheet

Side Impact Dummy

Lumbar Flexion Calibration

ATD Serial No.:036 Test I.D.:D02225

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 – 25.5	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	21	Pass
Force @ 0	mm	0 – 26.7	0	Pass
Force @ 20	mm	97.9 – 151.2	107.7	Pass
Force @ 30	mm	151.2 – 204.6	172.1	Pass
Force @ 40	mm	204.6 – 258.0	224.3	Pass
Return Angle	Degrees	12 Maximum	10	Pass
		Overall Test Results		Pass

_____ 2/14/02

Laboratory Technician Test Date

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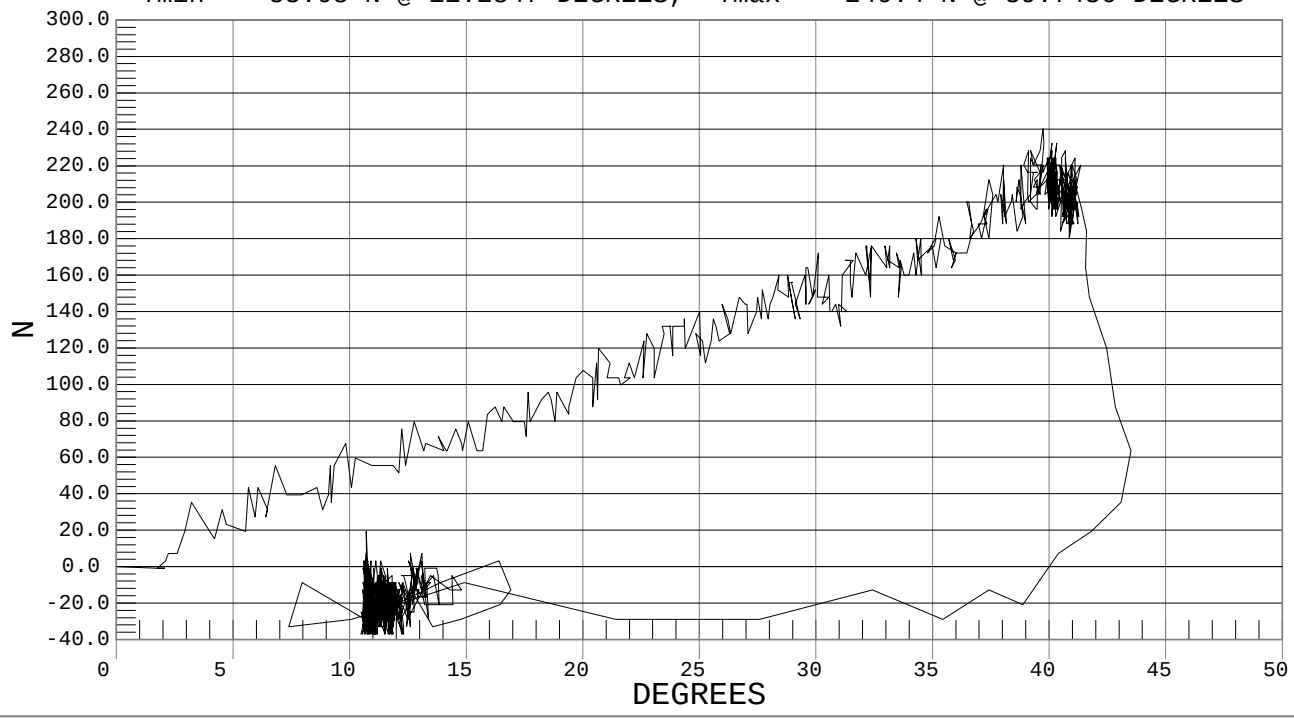
Approved By

LUMBAR FLEXION

Test Desc.:LUMBAR FLEXION
Component: DUMMY # 036

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

Ymin = -53.08 N @ 11.2847 DEGREES, Ymax = 240.4 N @ 39.7436 DEGREES



SID Calibration Data Sheet

Side Impact Dummy

Inspection Checklist

ATD Serial No.:036

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

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

_____ 2/19/02

Laboratory Technician Test Date

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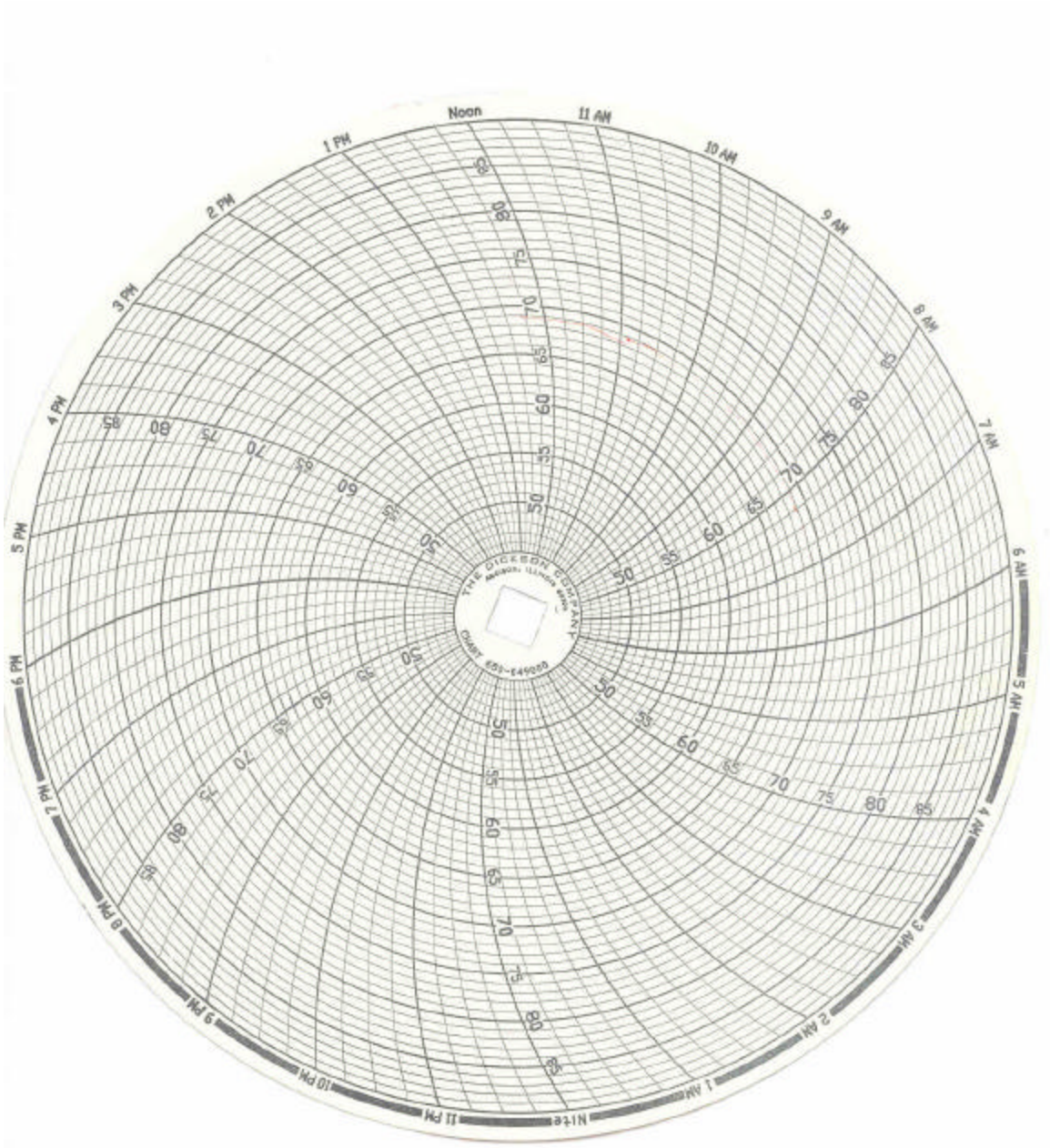
Vehicle and Dummy Temperature



APPENDIX D

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

DUMMY AND VEHICLE CALIBRATION DATA

	INSTRUMENTS FOR DRIVER DUMMY NO. 37		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Rib Y	J13942	Endevco	10/2/01
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	J13422	Endevco	1/8/02
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

	INSTRUMENTS FOR PASSENGER 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

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	H14-N06	Entran	9/12/01
Left Lower A-Post Y	F04-N05	Entran	1/16/02
Left Mid B-Post Y	G03-N01	Entran	8/7/01
Left Lower B-Post Y	I18-E18	Entran	11/2/01
Rear Floorpan Above Axle X	F20-G10	Entran	8/26/01
Rear Floorpan Above Axle Y	F07-A20	Entran	8/29/01
Rear Floorpan Above Axle Z	H02-J14	Entran	8/29/01
Driver Seat Track Y	K21-N16	Entran	1/17/02
Right Side Sill at Front Seat X	G03-N12	Entran	7/30/01
Right Side Sill at Front Seat Y	G03-N14	Entran	7/30/01
Right Side Sill at Front Seat Z	H14-N09	Entran	9/12/01
Right Side Sill at Rear Seat X	E23-R11	Entran	9/27/01
Right Side Sill at Rear Seat Y	F07-A14	Entran	8/8/01
Right Side Sill at Rear Seat Z	I12-F10	Entran	10/10/01
Left Side Sill at Front Seat Y	G03-N07	Entran	7/30/01
Left Side Sill at Rear Seat Y	I12-F11	Entran	10/10/01
Right Rear Occupant Compartment Y	K11-J08	Entran	8/8/01
Vehicle CG X	A08-A09	Entran	8/21/01
Vehicle CG Y	G08-B04	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